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The Green Thumb

JANUARY, 1948



A Bulletin of the **COLORADO FORESTRY AND HORTICULTURE ASSOCIATION**

Organized in 1884 - - Denver, Colorado

Membership Drive Successful

As stated in the November, "Campaign Issue", of The Green Thumb, the Colorado Forestry and Horticulture Association must have an annual budget of \$10,000.00 if it is to continue to furnish its members with the program of services that has been planned.

The Drive was designed to raise this amount in the following units:

Denver personal solicitation.....\$5,400
(Six teams at \$900 each)

Denver mail solicitation..... 3,000
(Including renewals by existing members)

Out of Denver personal solicitation and mail..... 1,600

Total\$10,000

The Denver personal solicitation is virtually concluded and will unquestionably go over the top. Three teams had raised their quota by November 14th. No. 1, Mrs. Arneill and Colonel Peck; No. 4, Mrs. Gray B. Gray and Fred Johnson; No. 6, Mrs. McMurtry and Mrs. Owen. The other teams are busy—mopping up.

MINIMUM DUES for membership in the Colorado Forestry and Horticulture Association are now \$2.00 a year.

At the annual meeting of members in January, 1947, it was voted unanimously that the basic membership fee of \$1.00 for a Supporting member should be increased to \$2.00 a year, commencing January 1, 1948.

In order to give you twice as much for your doubled dues, THE GREEN THUMB will now be published monthly instead of bi-monthly.

The mail campaign is producing a continual stream of new members and will undoubtedly attain its goal before the end of the year.

The state campaign is spreading slowly and steadily; outstanding communities thus far being Colorado Springs with 118 new members, Littleton with 42 and Burlington with 17. Over 800 new members altogether were enrolled between November 1st and December 10th. Of these, 280 were from the state at large.

Members have been slow on renewals for 1948, however, so please send in your renewal at once on the form inclosed in this issue of The Green Thumb.

Thanks to you all!

ROBERT E. MORE.

JANUARY PROGRAMS

Friday Evenings

Horticulture House at 7:45

Jan. 9. Kodachromes of Colorado Plants and Animals. By Miss Marjorie Perry.

Jan. 16. Horticultural Panel conducted by John Barrows and assisted by Howard Roerig, Wm. Lucking and Florence Myers. "All I know is what I read in the papers." A timely discussion on seed and nursery catalogs.

Jan. 23. "Ancient and Modern Gardens of England." By Frederick W. Hedgcock.

Jan. 30. "Now is the time to Plan." By G. C. Harman, Landscape Architect.

We are planning some very attractive programs for February.

We are also working on the outdoor trips for the summer.

Will you give us suggestions on the kind of program you would like?

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ROCKY MOUNTAIN HORTICULTURAL CONFERENCE

Plans are now being prepared for a two day conference in Denver on horticultural problems of the Rocky Mountain area. Gardeners, foresters, arborists and horticulturists from the professional, commercial, scientific and amateur ranks all over the Rocky Mountain-Plains area will meet to assist each other by exchanging experiences. All members of this association should be interested.

Monday and Tuesday, Feb. 2 & 3 will be the dates. The Monday evening meeting will be held in the YWCA auditorium at 1545 Tremont. All other sessions and the dinner Tuesday evening will be at the YMCA, 16th and Lincoln.

There will be lectures, pictures, discussions, demonstrations and tours conducted by the best experts of this state and other states. The dinner Tuesday evening will also be the annual meeting of this Association.

This conference is in line with the association's objectives of promoting horticulture in this region.

Programs and announcements will be given later.

The Green Thumb

A Bulletin of the
COLORADO FORESTRY AND HORTICULTURE
ASSOCIATION

Organized in 1884

GEORGE W. KELLY, Editor

MISS ALICE WOOD, Assistant Librarian

MRS. C. A. BARBOUR

Editorial & Advertising Asst.

L. C. SHOEMAKER, Treasurer and Custodian

1355 Bannock St., Denver 4, Colorado

Phone TAbor 3410

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

Published Monthly.

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Contributing \$10.00; Patron \$25.00; Donor \$100.00

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Horticulture Association

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ADVERTISING

In this issue we include for the first time commercial advertising. We intend that this shall be as valuable to the readers as any other feature of the magazine. We plan to limit the advertising as to space occupied and very definitely as to character. All advertising accepted must come up to the same standard as the articles—it must help to promote Colorado Horticulture. A study of these advertisements should help gardeners discover where best to obtain garden material and services. These advertisements should benefit the readers by giving them valuable information, the commercial people by introducing their services and merchandise.

All this material is on just two sheets of paper so that it can be removed if the reader wishes to have their copies bound. We hope however to make this section so valuable that few will care to remove it.

So that we may know how effective this advertising is, both the advertiser and the editor would appreciate it if you would indicate that you have seen the advertisement in the GREEN THUMB.

We believe that the firms here represented are all reliable and worthy of your support, but their inclusion here does not necessarily represent an endorsement by this Association.

—Editor.



Established in 1886
as a dahlia farm.
General Nursery
since 1920.

*Wilmore's Have
Handled Fine
Evergreens for
Over 20 Years*

W. W. Wilmore
Nurseries
P. O. Box 382
Denver 1, Colo.
Phone GLendale 4737

FISHER HAS IT



*When "Out on a Limb"
Call*



FRemont 2791-2

Bradford Landscape Contracting Co.

PAUL BRADFORD, DESIGNER AND CONSULTANT

665 Clermont Street

Phone TAbor 8038

Denver 7, Colo.

It's Time

TO do dormant spraying for scale insects on Elm, Maple, Lilac, Dogwood, Catoneaster and Evergreens.

TO trim shade trees.

TO move large trees and shrubs.

TO make plans for future landscape development.

We specialize in building rock gardens and perennial beds.

THE WEEK-END GARDENER

WINTER is really here this afternoon. I had to shovel snow from in front of the garage doors to get the car in when I came home at noon. All I could see of the garden was drifts of snow and snow laden branches. The evergreens showed up with a nice touch of green as I looked around the house. The red stems of the dogwood shrub and the few hawthorn fruit still hanging on gave a pleasant touch of red. The snow outlined the curving walk through the garden and made me realize the importance of good lines. A properly designed garden can be beautiful even in a snow storm.

There is surely nothing that I can do in the garden today. I'll rush inside where it is warm. But, wait, that tall juniper is starting to bend over with the weight of snow. I'll go in and get an old broom and knock the snow off. Whoops, I'll have to be more careful. The juniper limbs were frozen and I broke off several small twigs when I knocked off the snow. I'll have to go easy or I will do more harm than the storm. Well, that's that, I'll go in now. I don't see those low Pfitzers that were each side of the door; only mounds of snow. I'll bet the boy who cleaned the walk covered them with snow. I will have to dig them out or they may break with the weight of snow, or even smother if it does not thaw in a few days.

That was hard work and I'm tired, but there is snow everywhere and no place to sit. Say, that's an idea. We should have a good seat at the end of the garden where I can sit when I am tired, or just sit and enjoy the garden. I'll look up some plans for garden seats that I saw in a magazine a few days ago. Some time when the weather is bad and I am more ambitious than today, I'll make a bench ready for spring.

NO, NO, NO!

BY JACK HARENBERG

Don't trim your shrubs too severely at this time. You will lose much of your spring bloom if you do.

Don't let your trees or lawn go through the winter dry. The ground should have been soaked deeply in the late fall, but if that was not done and it is not frozen now, get out the hose and give it a good watering.

Don't neglect to take proper care of trees if there should be broken limbs from snow storms. If you are not sure that you know how to do the work you should call an expert tree man.

Don't plan to plant a tall Colorado Juniper at each front corner of your new house just because everyone else does. A good thing can be over done, and there are many other effective ways to landscape a house.

Don't plant large growing evergreens close to windows or walks where they will soon be overgrown and become a nuisance.

Don't plant street trees so close together that they cannot develop into well-shaped specimens eventually. Where possible, make the kind, size and spacing of your street trees conform to your neighbor's plans. The effectiveness of street trees depends largely on their uniformity.



ACCENT YOUR GARDEN WITH ROSES

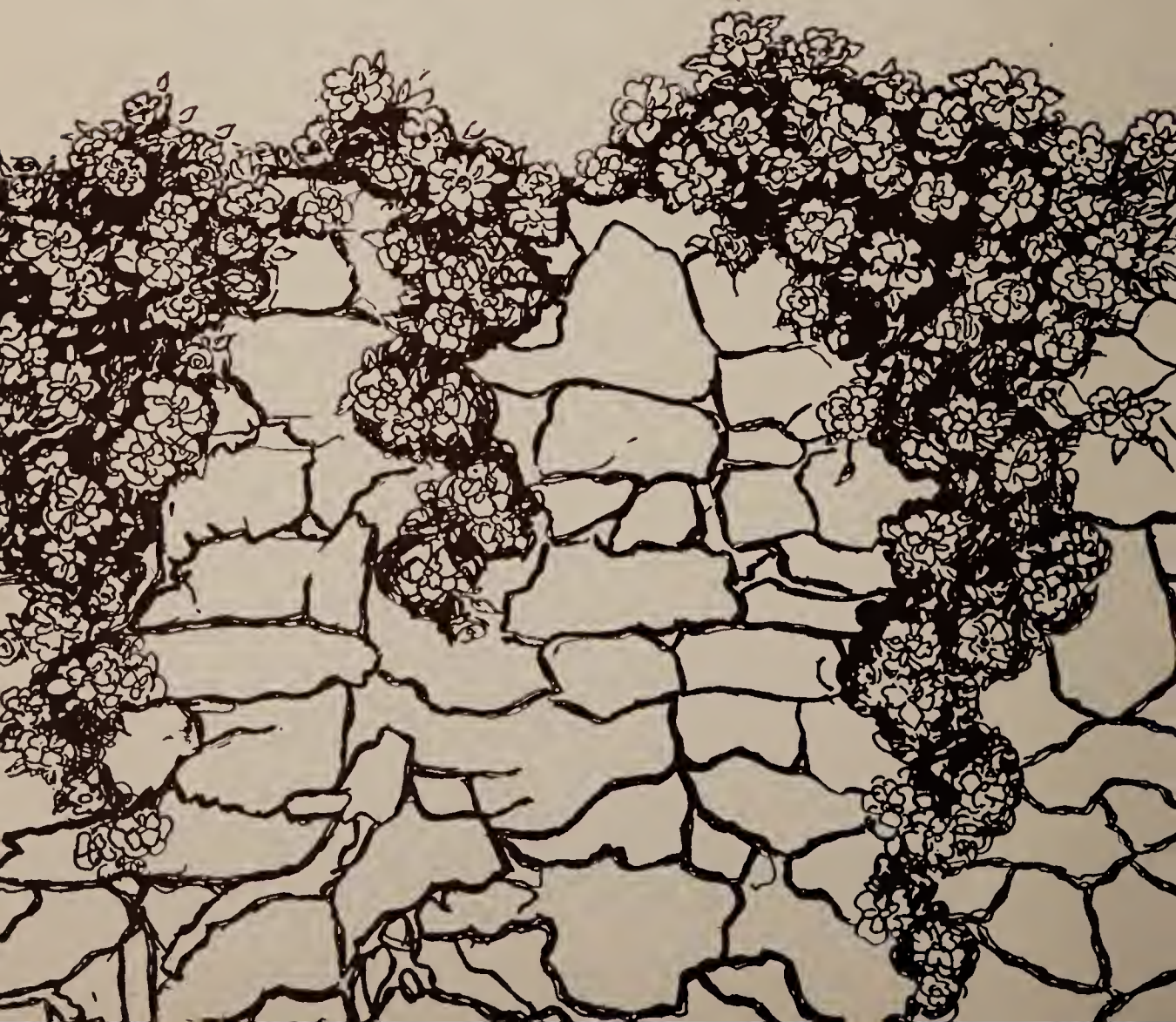
FLORENCE W. MYERS

WHEN you are dreaming over the garden catalogs these next few months before spring opens the door to summer, give a long thought to the use of roses as a part of the summer's garden picture. As color accent in the perennial border, as an edging, a color group or to hide a bare bank or fence, there is nothing that will give as much beauty and enjoyment as roses.

If your growing space is limited start your plans with the polyanthas and floribundas. They are extremely hardy, almost ever blooming and will thrive in any good garden soil. Their use is unlimited for bold splashes of color or to give mass effects to a perennial border. Goldilocks, a clear light

yellow floribunda is charming in front of evergreens or a shrubby border. Dainty pink Pinnocchio lends color enchantment to a group planting of blue delphinium, and crisp little salmon-orange Carol Ann will give character to a planting of white campanula. Carol Ann is one of the "ranunculus-flowered" group and one of the first to bloom in the spring. A polyantha border accented with roses grown as pillars is an all summer's delight, but wherever you use them—to edge a path, a drive, or in a separate bed edged by low-growing perennials, they will reward you with a riot of color and bloom.

Then there are the shrub roses. Al-



most every garden has an out of the way corner back by the compost pile or the ash pit which is made to order for *Rosa Hugonis*, for the less care it receives, the more luxuriant its fine lacy foliage and June shower of single yellow flowers. Or you may be planning a shrub rose hedge along the line border. If so, don't limit yourself to one or two shades. Here is one place you can let yourself go and throw color harmony to the winds to achieve an effect full of interest and beauty. The rugosa hybrids are a must in the rose shrub border with their dark green shiny foliage and their long blooming period. The foliage of *Rosa rugosa alba* is darker than any of this group and its flowers are single white with bright red-tipped stamens followed by large vivid orange hips. The other rugosas of this type have pink, magenta or crimson flowers and attractive hips. The Grootendorst varieties do not have the true rugosa foliage but are as hardy and their smaller pink or cherry-red flowers are double. Agnes, Harrison's Yellow, Austrian Copper and many of the old roses are suitable for the rose shrub border.

Was there ever a garden complete without its climbing rose? Climbers soften bare fences and buildings and add enchantment as a frame for a planned garden view. Paul's Scarlet has become one of the most popular of the climbers for it will grow and bloom almost in spite of you. Adverse conditions, crowding, partial shade, nothing seems to discourage it. It is especially lovely twined in and out of a white slab fence and is easily trained to cover an ash pit or chicken run. Another rose almost as tolerant of neglect is Mary Wallace with delicate shell-pink buds opening to fully double flowers. It is a vigorous climber and can be used to cover large areas. Among the ever blooming climbers

are New Dawn, another very hardy pink rose and Prosperity, always a mass of large double white blooms. This one is getting hard to find but is well worth the hunt.

If you have a bank or a bare terrace, don't miss the Brownell roses! They are among the hardiest of all roses, disease resistant and always in bloom. Coral Creeper has single apricot flowers with unusual red buds; Anne Vanderbilt is a glowing rose, red and gold semi-double; Shades of Autumn blends yellows, orange and shades of red into a bloom of richness and beauty.

Another rose of "sprawly" growth is Mabel Stearns with light pink, very double flowers and no bad habits. Grown on a rock wall surrounded by bright colored pansies, it makes an unforgettable garden picture. And it is another of the hardy types which will survive our winters without protection.

There will be many other equally good roses offered in the catalogs this spring which can be used to advantage any place in the garden. You may think you like only the hybrid teas but if you fail to grow even a few of the other varieties, you are missing the full enjoyment and beauty open to the most amateur gardener.

Empty porch and window boxes that housed gay annuals last summer may be attractive in winter too when filled with cut branches of evergreens.

Water lawn, trees, shrubs, flower beds and especially spring flowering bulbs in sunny, dry weather now. Much winter-killing in Colorado results from dryness where snow is absent.

BY K. N. MARRIAGE

We need 3 copies of Vol. I, Nos. 3 & 4 of the Green Thumb, to complete sets for binding. We will gladly pay 25c each.

STREET TREES FOR COLORADO

We submit herewith suggestions for suitable street trees to plant in various locations over the state. These lists and descriptions have been compiled by the Research committee of this association, and represent the combined experience of many people. No such list, however, is ever complete, as new trees are continually being discovered and new methods of handling old ones are being developed. For each section of the state we have recommended some of the best street trees and also indicated others which may be used either under very favorable or very difficult conditions.

Many other varieties or types might have been mentioned, but there would be little difference in these and they would simply add to the difficulty of selecting the proper trees.

We welcome criticisms of this list and invite anyone with experiences which differ from these suggestions to write us.

There are few Colorado communities which would not be very much improved by the planting of more or better street trees. Our plains and mountain villages especially need more attention given to the planting of suitable trees.

Refer to back issues of the Green Thumb for further descriptions and listing of additional trees. The July '45, Sept. '45, Mar. '46, May '46 and Mar. '47 are especially helpful.

Evergreens are not considered as suitable for street use except in very high altitudes or other very difficult locations where other trees will not grow, as their beauty is usually spoiled if they are trimmed up sufficiently to make them safe for street use.

List No. 1. HIGH MOUNTAINS. 8,000 to 10,000 feet.

Narrowleaf Poplar	Engelmann and Colorado Spruce	Limber, Bristlecone and Lodgepole Pine
Quaking Aspen	Alpine Fir	

List No. 2. MOUNTAINS. 6,000 to 8,000 feet.

Many of those from List No. 1 and No. 3 may be used in borderline locations; and, in especially sheltered places, occasionally some from list No. 4.

Smoothbark Poplar	Balsam Poplar	Yellowstem Willow (also Russian Willow)
Carolina Poplar (also Canadian Poplar)	White Willow	Bigtooth Aspen

List No. 3. Northern and Central Great Plains, San Luis and Arkansas Valleys, Southwest and Northwest parts of the state, 3,500 to 6,000 feet.

All those from list No. 2 may also be used if necessary but are generally inferior.

Siberian Elm	Soft Maple (except in very alkaline soil)	Plains Poplar (Western Cottonwood, Cottonless Cottonwood)
Honeylocust	Russian Olive	
Common Hackberry	Green Ash	
American Elm		

List No. 4. Foothills, Irrigated areas and exceptional places in other areas, 4,000 to 6,000 feet. All from list No. 3 may also be used, but Siberian Elm, Cottonwood and Russian olive are not good street trees in areas where other kinds are available.

American Linden	English Elm	Eastern Black Walnut
Cutleaf Weeping Birch	American and European Mountainash	White Ash
Bur Oak		Golden Weeping Willow

List No. 5. Southern Plains, Foothills and valleys. 3,500 to 6,000 feet. Most of those from list No. 3 and occasionally some from list No. 4 may be used.

Russian Mulberry
Sycamore

Kentucky Coffeetree
Western Catalpa

Texas Black Walnut

List No. 6. Less desirable trees for extremely difficult locations, 3,500 to 8,000 feet.

Treeofheaven Ailanthus
Bolleana Poplar
Lombardy Poplar

Chinese Poplar
Silver Poplar (for dry
places)
Boxelder

Black Locust
Black Willow
Laurel Willow

List No. 7. Additional good trees for exceptionally favorable locations such as Boulder, Canon City, Grand Junction. 4,000 to 5,000 feet.

Ohio Buckeye
Common Horsechestnut
Norway Maple
Sugar Maple
Schwedler Maple

Red Oak
Pin Oak
Scarlet Oak
English Oak
Tuliptree

European Linden
Bigleaf Linden
Littleleaf Linden
Black Cherry

List No. 8. Smaller or flowering trees for special locations. Usually low headed and not suitable for much travelled streets.

Dolgo Crabapple
Hopa Crabapple
Redsilver Crabapple
Colorado Hawthorn

Downy Hawthorn
English Hawthorn
Paniced Goldenraintree
Paper Birch

American Yellowwood
Japanese Pagodatree
Peachleaf Willow

ALPHABETICAL LIST OF TREES

Acer negundo, BOXELDER. Short-lived native tree. Useful on plains and in high altitudes where nothing else will grow. Susceptible to damage by insects and diseases, and of ragged appearance when older.

Acer platanoides, NORWAY MAPLE. Difficult to establish and subject to sunscald, but with favorable conditions it makes a very fine tree.

Acer platanoides, Cl. SCHWEDLER MAPLE. Leaves are a beautiful mahogany-red for weeks in spring, turning later to green. Very beautiful, but slow growing and hard to establish.

Acer saccharinum, SOFT MAPLE. A clean and beautiful tree. Of medium fast growth. Has few serious pests. Should have rich moist soil and plenty of room for both roots and top to develop.

Cutleaf Weeping Birch



- Acer saccharum*, SUGAR or HARD MAPLE. Similar in advantage and difficulties to Norway or Schwedler Maple.
- Aesculus glabra*, OHIO BUCKEYE. A tree hard to establish and slow in growth, but of beautiful symmetrical shape and very attractive in flower.
- Aesculus hippocastanum*, COMMON HORSECHESTNUT. More attractive bloom and form than the Buckeye, but more difficult to establish.
- Ailanthus altissima*, TREE OF HEAVEN AILANTHUS. Has disagreeable odor and suckering habit, but will thrive in smoky atmosphere where other trees would die. Beautiful winged fruit.
- Betula papyrifera*, PAPER BIRCH. Lower and shorter lived tree than the cutleaf, and without cutleaves or weeping habit. Does have the same beautiful white bark and can usually be purchased for a small fraction of the cost of the cutleaf.
- Betula pendula*, Cl. CUTLEAF WEEPING BIRCH. Truly the queen of deciduous trees with its graceful drooping branches, cutleaves and beautiful white bark. A little difficult to start and very sensitive to drouth. Damaged in some sections by aphids and the Bronze Birch Borer.
- Catalpa speciosa*, NORTHERN or WESTERN CATALPA. Loved for its beautiful flowers, large leaves and picturesque seed pods. Disliked for its dropping flowers, pods and leaves. Has irregular habit of growth and winterkills frequently except in southern part of state.
- Celtis occidentalis*, COMMON HACKBERRY. A fine tree when established. Difficult to transplant, especially in larger sizes. Slow growing, drouth resistant and quite free of disease and insect pests.
- Cladrastis lutea*, AMERICAN YELLOWWOOD. An uncommon tree in the state, but will grow in very favorable locations.
- Crataegus coloradensis*, COLORADO HAWTHORN. Very slow growing, but hardy in a great range of altitudes. Beautiful in flower, fruit and foliage.
- Crataegus mollis*, DOWNY HAWTHORN. One of the best hawthorns to train as a single stemmed tree. Large red fruit.
- Crataegus oxyacantha*, ENGLISH HAWTHORN. Beautiful cut leaves, white flowers and red fruit. Subject to blight.
- Elaeagnus angustifolia*, RUSSIAN OLIVE. A picturesque small tree with silvery foliage, small fragrant flowers and attractive silvery fruit. Hardy, drouth resistant and adaptable for many uses.
- Fraxinus americana*, WHITE ASH. A stiff "heavy" tree which is slow growing and will stand much abuse.
- Fraxinus pennsylvanica lanceolata*, GREEN ASH. Slow growing, hardy and disease free. Preferred by most horticulturists for Colorado use.
- Gleditsia triacanthos*, HONEYLOCUST. Picturesque sturdy habit of growth. Very hardy and drouth resistant. The thornless variety is preferred. This is the locust with tiny flowers, large seed pods and few serious pests. A little hard to transplant and slow growing.
- Gymnocladus dioica*, KENTUCKY COFFEETREE. Deep rooted and slow growing. Makes a nice shaped, clean tree of bold appearance.
- Juglans nigra*, EASTERN BLACK WALNUT. Deep rooted, slow growing and sturdy appearance. Should be moved when small. Bears edible nuts.

Juglans, rupestris, TEXAS BLACK WALNUT. Rapid growing hardy tree in favorable locations. Very small nuts.

Koelreuteria paniculata, PANICLED GOLDENRAINTREE. Small irregular tree making a grand showing of its flowers and fruit. Apt to kill back in northern or unfavorable locations.

Liriodendron tulipifera, TULIPTREE. Large symmetrical tree with beautiful flowers. Only hardy in very favorable locations.

Malus sp. Cl. DOLGO CRABAPPLE. White flowers and brilliant red fruit which is as good to use as to look at.

Malus sp. Cl. HOPA CRABAPPLE. Beautiful rose-red flowers and small red fruit. Narrow upright habit of growth. Hardy and blight resistant.

Malus sp. Cl. RED-SILVER CRABAPPLE. Leaves green above and red-silvery below. Attractive rose-red bloom.

Morus alba tatarica, RUSSIAN MULBERRY. Birds prefer the fruit to cherries. Kills back badly except in southern part of state and favorable locations.

Platanus occidentalis, SYCAMORE or AMERICAN PLANETREE. Slow growing and very difficult to establish, but eventually makes a very beautiful large tree in favorable locations.

Populus acuminata, SMOOTHBARK POPLAR (Lanceleaf Cottonwood) upright in growth and of neat appearance. Thrives at high altitudes or where there is moist soil.

Populus alba Cl. BOLLEANA POPLAR. Tall slim habit of growth. Smooth green-white bark. Very rank feeder and so susceptible to disease and insect attacks that it



*Norway Maple at 309 N. Pikes Peak Ave.
Florence, Colo.*

is not worth planting in many old sections.

Populus alba, Cl. SILVER POPLAR. Wrongly called "Silver Maple" because of maple shaped leaves. Light green smooth bark and spreading habit. Unlike other poplars it will grow in dry places. Sometimes suckers from the roots.

Populus angustifolia, NARROW-LEAF POPLAR. Thrives at higher altitudes than any other large native tree. Rather good habit of growth.

- Populus balsamifera*, **BALSAM POPLAR**. A good tree for high altitudes where nicer trees will not grow.
- Populus canadensis eugenei*, **CAROLINA POPLAR**. Extensively planted a few years ago. The native cottonwoods are better.
- Populus grandidentata*, **BIGTOOTH ASPEN**. Clean white bark. Larger than the native Aspen. Makes a nice shaped tree for all altitudes.
- Populus nigra*, Cl. **LOMBARDY POPLAR**. The familiar columnar poplar of old gardens. Subject to attacks of disease and insects.
- Populus sargentii*, **PLAINS POPLAR** (Western Broadleaf Cottonwood). The most distinctive native tree of this area. Too large for most street use but still valuable in places where there is plenty of room and moist soil. Cottonless trees propagated from male trees by cuttings are most satisfactory.
- Populus simoni*, **CHINESE OR SIMON POPLAR**. Loose upright growth similar to Lombardy. Thought to be a hardier tree, but is still a poplar.
- Populus tremuloides*, **QUAKING ASPEN**. A beautiful small native tree. Hard to transplant. Will grow at lower altitudes but is chiefly useful at high altitudes where no other deciduous tree will grow.
- Prunus serotina*, **BLACK CHERRY**. When established in a favorable location it makes a good, tall, clean tree. Hard to transplant and has tender bark.
- Quercus coccinea*, **SCARLET OAK**. Very beautiful, especially in fall color. Requires a rich, slightly acid soil.
- Quercus palustris*, **PIN OAK**. Similar to Scarlet Oak.
- Quercus macrocarpa*, **BUR OAK**. A sturdy bold tree of slow growth. Does not have as brilliant fall color as other oaks, but is hardier in Colorado.
- Quercus robur*, **ENGLISH OAK**. Nice shaped slow growing tree.
- Quercus rubra*, **RED OAK**. Similar in habit to Scarlet or Pin Oak.
- Robinia pseudoacacia*, **BLOCK LOCUST**. Very drouth resistant, and has beautiful flowers, but is soon destroyed by borers in most areas.
- Salix alba*, **WHITE WILLOW**. Hardy under many conditions if sufficient water is available.
- Salix alba vitellina*, **YELLOWSTEM WILLOW**. Striking for its winter color.
- Salix amygdaloides*, **PEACHLEAF WILLOW**. A smaller native tree.
- Salix babylonica*, Cl. **GOLDEN WEeping WILLOW**. The most beautiful of the willows. For lower altitudes where there is plenty of water.
- Salix nigra*, **BLACK WILLOW**. A coarse native tree of streambanks.
- Salix pentandra*, **LAUREL WILLOW**. Attractive glossy leaves. Has all the faults of all the willows; brittle stems and rank feeding habits.
- Sorbus americana*, **MOUNTAIN ASH**. Subject to sunscald and blight, but a very attractive tree when established. Bright orange fruits.
- Sorbus aucuparia*, **EUROPEAN MOUNTAINASH**. Similar to above.
- Tilia americana*, **AMERICAN LINDEN**. One of our most beautiful trees for street planting. Heart shaped leaves, fragrant bloom and interesting fruit. Subject to sunscald when first transplanted unless

trunk is shaded or wrapped. Should be severely pruned when moved unless with a ball of earth.

Ulmus procera, ENGLISH ELM. More upright and symmetrical than the American. Sometimes sends up suckers from the roots. Also subject to Elm scale.

Ulmus pumila, SIBERIAN ELM (Chinese). A good tree for Plains and high altitude planting where it grows slowly. Where it gets more water and better care it grows too rapidly and is subject to severe damage from snow and wind. Should be frequently and carefully trimmed to minimize storm damage.

Tilia cordata, LITTLELEAF LINDEN. Smaller leaves and more compact growth.

Tilia europaea, EUROPEAN LINDEN. Better shape than the American, but bark more tender.

Tilia platyphyllos, BIGLEAF LINDEN. Good but rarely used.

Sophora japonica, JAPANESE PAGODATREE. Attractive leaves and flowers. Hard to start but grows well in favorable places.

Ulmus americana, AMERICAN ELM. Although it is subject to attacks of Elm scale and must be sprayed frequently it is still one of our very good street trees.

THE WEEK-END GARDENER

THIS afternoon is cloudy and cold, but no snow, so I'll not stop to even look at the garden. It's a good time to get indoors and just keep warm. What is all this stack of mail on the table? Arctic Seed Company, Whoozis Nursery, ABZ Landscape Service. I guess it must be time to make out orders for next spring's plantings. Well, if I can't work in the garden actually I can dream of the time when I can, and I can decide now on the things that I will need.

Here is a beautiful catalog. I'll bet that it cost the company a pretty penny to publish. Ah-h-h, isn't that flowering dogwood a beauty, and they say right here that it is perfectly hardy. I'll beat my neighbor to that. I wonder how come he hasn't planted one before now? There may be a reason. I'd better call up the Oldtimer and ask him. Hm-m-m, he says that the catalog was issued in the East, and that flowering dogwood are hardy there. I don't suppose they know that we have gardens in Colorado, or that our climate is different here. I wonder just how many of these beautiful things that are pictured here will grow in Colorado. Of course I could order some of them and try them out, but I wonder if the Oldtimer has not done that years ago. I'll call and ask him if I can't come over to his place and let him go through the catalog with me and tell me what things are hopeless here, which ones are reliable and which things may grow with exceptional care.

Oldtimer tells me that most of the plants which will do well here can be purchased from the local nurserymen and seedsmen, and that they will be able to tell me which are suitable for each situation that I have. I'll enjoy the pretty pictures, and I believe that I will gamble on that beautiful hydrangea, but I'll go to that reliable firm that I know of close by for most of my needs. I'll call him up now. I'll make a list now of the things needed, then I can spend the rest of the afternoon just browsing through these catalogs and dreaming.

CONTRACTOR'S SOIL

New homes being built, I think we will all agree, are much over-priced, considering their box-like design, their size and the quality of materials used. What disturbs me most, as I travel around, is the fact that it is going to be very difficult to garden them. In some places I have seen contractors skim off the loam and cart it away. Elsewhere, I have seen the clay sub-soil from the cellar hole carelessly dug out and spread right over what little loam is present.

Then, too, many of these homes are going up on suburban land which has

remained unused, at least in part, because it was not worth much for any purpose. Some of it is too wet. In other places it is covered with too thin a layer of loam. In their enthusiasm and innocence many new home-makers are going to try to establish gardens, plant lawns and hedges and so forth. I am afraid they are going to be bitterly disappointed in many places. Gardening is difficult enough for beginners under favorable circumstances but it will be nearly impossible in many of the developments I have seen.

"Rambling Observations of a Roving Gardener"
Reprinted by permission of Horticulture Magazine

A general view of the lower gardens from the east, showing parts of the natural rock-ways which were built, and the elaborate metalwork of the imported "well".





Photos by Edgar E. Warren

Looking back up the hill to the house from across the swimming pool.

THE WECKBAUGH GARDEN

By its builder, ROY E. WOODMAN

TO design a beautiful garden and to see the brain child take form even to the last detail of construction would seem to me to be the highest ambition of any landscape architect. The interest shown by Mrs. Ella M. Weckbaugh in every detail was surpassed only by her love of the garden that now makes her home a Denver show place. The sunken formal garden to the south was designed with the idea of giving the house and front entrance a lift from the street level and to make more attractive an otherwise rather flat area. In this garden are formal rose beds and perennial bor-

ders, hedged with low cut privet hedges.

The not too pleasant view to the south of the alley garage was completely hidden by three very large blue spruce placed on the center axis of the formal garden. The foundation plantings enhance but do not cover the extremely beautiful architecture of the house, and the picture is framed by large evergreens and deciduous trees to the west and east, so placed that they do not exclude the mountain view.

The broad grass terrace on the north of the house, circled by balus-





trades and climbing roses, affords an unexcelled view of the country club district, the mountains, a bit of Cherry Creek far below and the extensive gardens extending north of Cherry Creek.

Building the rock garden with its several pools and waterways involved not only labor and equipment to obtain the one-half to three ton rocks that had to be secured, but also required the services of someone deeply interested in this sort of thing who would find rock with character, with waterways (not easy to find), with lasting qualities and to place the rocks so that they would look much the same as in their mountain location.

The pool and cascade directly below the north terrace is the beginning of what was to have been a series of pools and cascades extending some three hundred feet or more to the north and dropping some thirty feet to a final pool with an electric fountain.

Beyond the extensive lawns to the west, north and east are the informal shrub and tree borders that enclose the grounds. These borders include numerous varieties of beautiful and unusual flowering plants. The great variation in ground levels in this garden is one of the factors that enhances its beauty.

Picture on cover shows entrance gate. Center spread shows view to the north from the garden entrance.

The north side of the house, showing the fountain which marks the center of the level area overlooking the lower gardens.



YOU ARE INTERESTED IN PHOTOSYNTHESIS

Every person is interested in photosynthesis for there could be no animal life on this earth without it. Through the action of the sun on the green chlorophyll in plant leaves the carbon dioxide from the air and water from the earth is transformed into sugars and starches on which the whole animal life of the world exists.

In addition to this manufacture of animal food, all our lawns, all our trees, all our flowers are dependent on this process of nature. Every person in the world should realize his dependence on chlorophyll and photosynthesis, but a few of us like to go further than this and learn more about growing plants, how they grow,

how they bloom, how they produce their seeds. We like these plants for their beauty and for their usefulness.

The Colorado Forestry and Horticulture Association is organized to bring together people who have a "green thumb" or those who are interested in plants, and to be ever watchful for the best ways in which man can use these plants for his pleasure and profit. Since climatic conditions are so very different in Colorado from other parts of our country we feel it is very important to maintain a central horticultural organization which can collect and disseminate this regional horticultural information.

THE WEEK-END GARDENER

THIS afternoon is bright and warmer. I'll take a look around the yard before I go in. The lawn is almost free of snow, and looks good and green yet. I'm glad that I gave it a good watering before it froze up. That south slope begins to look a little dry. I'll watch it and give it more water if this sunny weather lasts another week. I wonder if it would be alright to fertilize it now. I'll call the Oldtimer. He says that it is OK to spread fertilizer on at any time, that it will leach in and be ready to give the lawn a good boost when the first spring days come. I wonder why we must give our lawns a shot-in-the-arm like this every year. If there had been good soil to plant the lawn in it should grow well for many years before it needed additional food. I expect that this lawn was planted in the usual "Contractor's Soil" made up of dirt from the basement and plaster and various builders rubbish.

I wonder how those bulbs are getting along that I put in the basement last fall. The glads are alright, but this box of dahlia roots are too near the furnace and they are beginning to shrivel. I'll move them to a cooler place and moisten the packing around them a little. I'll have to be careful that I don't get them too wet or they will sprout before warm weather comes.

Mom, there are bugs on your begonias. What'll we do about them. Guess I'll bother the Oldtimer again. Say, Oldtimer there are all kinds of wild animals eating up Mom's house plants. What should I spray them with? You mean to say that there are different poisons used for different insects? I supposed that any kind of spray would kill any kind of insect. Don't the new DDT and Chlordane sprays just about kill everything? Well I'll tell you what they look like and which plants they are feeding on and the kind of damage they are doing, then can you tell me the best spray or dust to use on them? OK, Thanks.

ASSOCIATION DEFENDS NATIONAL FORESTS

IN order that readers of the "Green Thumb" may know that our Association is continuing its historical tradition of speaking out when sound conservation policies are attacked, we publish the following for the record. It is a letter that was addressed by our President, Mrs. John Evans, to Congressman Frank Barrett, Chairman of a sub-committee of the Public Lands Committee of the House of Representatives which held a series of hearings in the West during the late summer of 1947. This letter was presented to Chairman Barrett and a copy given to Colorado Congressman Robert Rockwell at the Grand Junction hearing September 5, 1947.

Dear Congressman Barrett:

I am taking the liberty of addressing to you in behalf of the Colorado Forestry and Horticulture Association the following statement with the request that it be included in the record of your present hearings.

This Association was originally organized as the Colorado Forestry Association in 1884. It was founded by citizens of this state who were keenly appreciative of the growing value of Colorado's water for irrigation and of the importance of maintaining good cover on the mountain watersheds. They were especially alarmed by the destructive forest fires that burned over large areas of mountain land year after year. These far-seeing and earnest citizens through their Forestry Association played an active and influential part in interesting the Federal Government in attempting to put an end to this enormous waste. The outcome of this movement eventually was the establishment of the National Forests. Colorado secured the second "Forest Reserve", as they were at first called, in the United States—the White River, set aside in 1891. More reserves were later added until a total area of thirteen and $\frac{3}{4}$ million acres was reached in Colorado, comprising the bulk of the high mountain watersheds of the state. By Act of Congress the U. S. Forest Service was set up in 1905 and given the handling of the reserves which were renamed, "National Forests". In the instructions which the Forest Service received from the Secretary of Agriculture at that time it was made clear that all of the resources of the National Forests were to be put to beneficial use as well as protected. While the Forests were National properties special consideration was to be given to the needs of residents within or adjacent to them

and to some degree dependent upon their resources.

One resource of great importance locally was the grazing to be found on the grass lands intermingled with the forest cover. In order to distribute the grazing privileges as fairly as possible to those most dependent on National Forest ranges a management policy was gradually worked out which recognized priorities and degrees of dependency and at the same time gave no vested rights to any user. This last is an important feature. In the opinion of our Association it should never be waived or abrogated. The range lands of our high mountains as well as the tree covered slopes are of first importance as watersheds. Authority should remain in the managing agency of the Government to regulate the stocking and use of these ranges with water production as the primary objective. (And this should be true as well of publicly owned grazing lands outside the National Forests where watershed or other important uses are involved.) Water is without question the most important product of Colorado's National Forests.

Our Association has naturally interested itself down through the years in the way the Forest Service has done its job. We believe that the members of this Service have consistently tried to protect and improve the great national properties under their care. They have seemed to be keenly conscious of the necessity of integrating the various uses: water production, domestic stock and big game grazing, fishing, logging, recreation, so as to prevent conflicts and damage and to give each use recognition, commensurate with its importance. They have not always been successful in this, without a doubt. In their efforts to meet the demands of cattle and

sheepmen for range they have been too optimistic in their estimates of carrying capacities, especially during a succession of favorable seasons, in the opinion of some people. However, we believe that the Forest Service merits our full support and we earnestly recommend against any weakening of its authority over the regulation of grazing on National Forests or the elimination of any areas of our State's important watersheds from these Forests.

Our Association became so much concerned over the reported threats of such action last winter that the Board of Directors, representing a membership of approximately 1,200, adopted the following resolution to which the attention of your committee is respectfully called:

Whereas:

The creation and successful administration of the national forests during the past forty (40) years and more have proven to be one of the most outstanding and worthwhile results of the growing interest of the people of the United States in the conservation of their natural resources; and

Whereas:

The Colorado Forestry Association, since its inception in 1884, has consist-

ently encouraged the creation of national forests and has supported the regulated and conservative use of the resources of publicly-owned wild lands; and

Whereas:

There now appears to be developing a concerted effort on the part of certain groups of stockmen, users of national forest ranges, to secure legislation that would authorize the classification and segregation of so-called "grazing lands," now integral parts of the forests, with the ultimate objective of passing them into private ownership; now therefore

Be it resolved, by the Board of Directors of the Colorado Forestry and Horticulture Association:

That this Association stands firmly for maintaining the integrity of national forests and their continued administration in the interests of the people of the United States on the principle of "multiple use"—the coordinated and balanced use of all resources for all legitimate purposes.

Approved by Board of Directors this 24th day of February 1947.

Very sincerely yours,

Gladys C. Evans (Mrs. John Evans)
President

Copy to Congressman Rockwell



THE WEEK-END GARDENER

ANOTHER nice sunny day, but cold. This should be the time to prune the grapes. The stored up food that is in them ready for making new growth next spring, is all down in the roots and they will lose little if I prune now. I notice that the commercial grape growers all cut their vines back to only a few stems. Some use one pattern and some another, but they all cut them away back. I want my grape vine to cover the pergola as well as give a little fruit, so I guess that I'll leave a few long stems. That sun seems very warm on the south side. I expect that I should put up some sort of shade on the south side of that new little White Pine and the Linden tree. They are not accustomed to this hot drying sun in winter.

As the sun slips down lower the air gets colder. I'll go inside to do my gardening for the balance of the afternoon. Now is just the time to get out that new book that Mom gave me for my birthday last summer. This tells a lot of new tricks for taking care of roses. I wonder if Oldtimer could tell me of other books which might give me more good suggestions. The kids are all in school. Why shouldn't I take up some subject that I am particularly interested in and read all I can find about it. The more I know about the plants the more fun it will be next summer. Oldtimer told me that I could get a lot of first hand information by attending the meetings of the Rose Society and the lectures arranged by garden clubs and Horticulture Societies. This is going to be fun.

A FEW LITTLE-KNOWN FACTS ABOUT SOME WELL-KNOWN PLANTS

And Other Notes

An understanding of a few irregularities of certain plants as a likely aid to their improvement.

BY HELEN FOWLER

DELPHINIUMS, — You will read here of two points of culture on the Delphinium, one, staking which is often done badly, or too late, or not at all and the other how to get two blooming seasons from this plant. Gardeners are generally familiar with watering, drainage, spraying, mildew and pests, and I believe, know what that nebulous phrase, "good garden soil" means.

JUNE and LATER WINDS — What do you think of those 3-inch strips of lumber you see in gardens with those handsome flower spikes lashed to them for support? Now for good looks as well as for the well-being of Delphiniums, staking is done in two stages or more. The taller supports are not set in the early stages of growth. Short lengths of the same diameter are put out in the beginning so that the roots may grow around them and injury to the crown will not result from thrusting a later stake into the developed plant. You will find the final supports to be 4 to 6 feet, or even more, and should

be of natural or soft-green bamboo, tied with raffia, never twine. The stake should be tied, first with the raffia, then carried over to the flower spike, with two good twists, knotted, instead of from the flower spike to the stake. This is done to preserve the natural way of the plant.

FEEDING FOR SECOND BLOOM, — The first faded flower stalks are cut off just below foliage level; the plants then should be given a rest before new growth appears by keeping on the dry side for two or three weeks. When the new shoots appear, **BUT NOT BEFORE**, the remaining old stems must be cut down to the ground and one teaspoon of ammonium phosphate given to each plant, in a fifteen inch diameter circle. This should be worked in slightly and a deep watering given. Do not allow all of the shoots to develop on this second growth. All but two or three should be broken off. The remaining shoots will develop into fine spikes again. I am speaking here of plants that have been in the garden three or



more years; two year olds, however, if not allowed to seed, will bloom all summer, to the very end.

OTHER WAYS TO GROW DELPHINIUMS.—Try them in an uncrowded cutting garden; the finest hybrids have a good chance there. Sometimes, too, there is a better way for background effects than crowding Delphiniums into a too-narrow border. They may be placed in a separate 18-inch wide strip behind the regular border with a grass space wide enough to run the lawnmower. The background is assured in this way while every cultural advantage is maintained.

* * *

PEONIES.—The common cause of failure may be traced in planting Peonies in a position exposed to the early morning sun. Have you not noticed that the buds of Peonies are visible long before they develop into flowers and while the spring frosts are yet to be expected? If plants are set in a border facing east and the early sunshine reaches them after a frosty night, it is possible that the buds will be damaged and the flowers will be spoiled.

In light land the Peony will often thrive better when in partial shade than in full sunshine. F. F. Rockwell, in his "PEONIES" lists nine reasons why Peonies may not bloom. Chelsa Sherlock in the introduction of the book, writes "It thoroughly covers the questions and answers we all have in mind". "Peonies" may be found on the shelves of the Horticultural Library.

* * *

TULIPS.—No special winter protection for bulbs is necessary in Colorado if the ground has been well prepared; but if a mulch is considered necessary, it should never be put on until after the ground is frozen hard

—hard. Moles sometimes make tunnels in loose soil making trails for mice which consider Tulip bulbs a special treat. Tulips may suffer from an insufficient supply of moisture as well as from giving them too much water, causing them to rot. Watch the watering even as early as late March.

WHAT SHALL BE DONE WITH TULIPS AFTER BLOOMING.—When flowers are not used for cutting, they should be removed from the stems before the petals drop. The bulbs may be left in the ground to ripen but if the same ground is wanted for a later display, the plants should be lifted toward the end of May and put in some spare space, as behind shrubbery or the like. They should be placed in a shallow trench and covered with soil (heeled in), taking special care not to break the brittle stems. In two or three weeks the leaves will have disappeared, when the bulbs should be lifted and spread to dry in a cool, shady, airy place. Soon they will be ready to clean and store for the summer. With cool and airy storage they will be ready to set out again in the fall, which time in Colorado is mid-October to late-November; any time as long as the ground is not frozen too hard.

Have you ever thought to follow up Tulips with ICELAND POPPIES? I only hope you did not miss seeing the border of Iceland Poppies this past summer, planned by Mr. S. R. DeBoer for the city of Denver near 300 Clermont. It is not just my opinion that it was the gayest and the most exciting done there in many years.

* * *

THE LARGE-FLOWERED CLEMATIS (C. jackmanni)—Have you lost one, or two or a dozen or even more of this showy, purple-vine? These few hints may help you. Often the plant makes a three foot growth



Photo by Mrs. A. N. Murray

and for no apparent reason whatever the vine is gone. It has been found that this disappearance is caused by a ruinous worm, a nematode. If a study is made of the roots of the Clematis, it will be found these usually grow in tiers, three or four along the stem. On top of these tiers, eyes will be found. In planting, the top set of eyes should be covered with at least two inches of soil and the vine cut down to within two inches above the soil. Now knock the bottom out of a four or five inch clay flower pot and set over the vine, upside down, working the rim one inch into the soil. Fill the pot with clean, sharp sand and leave for about two summers, after which time the pot should be broken and removed. It is through broken tissue that this worm is said to enter, so be careful working around the plant at all times. One of the most attractive plantings of this Clematis is on the white fence of the Frank Kemps, one planted every 12 feet.

UPSETS IN COLOR GROUPINGS.—Despite all of your careful planning, you may find that due to

seasonable variations, those plants planned to bloom together, do not do so, and vice versa.

GARDEN COMPOSITION.

All the common tasks of the garden must be done before we may turn to its poetry. The needs of the Delphinium must be supplied before we may plan for its final blue beauty among pink Hollyhocks and white Physostegia, or the lovely belladonna, with the Painted Daisy, (James Kelway), and bordered with large sky-blue Pansies. The climbing Clematis must be understood before an eye must weep at the unfurling of its purple bloom against a red-brick house. The continuous beauty of the Canterbury Bell is prolonged only by the careful taking off of every shriveling bloom, before gathering with white Iris and pink Sweetwilliam. As for the early bulbs—there are two books, just received at the Horticultural Library: **DAFFODILS—TULIPS**, by Rev. J. Jacobs, an artist friend of Mrs. Francis King, who said of Mr. Jacobs, "Whenever two or three Daffodils or Tulips are gathered together, there is he also." We read in these books of the wonderful perfection of the tribe of Muscari, the Grapehyacinth, and how they must be closely packed together in planting for any really good effect; and of Crocus and all the other small bulbs of which we know so little.

THE ROLE OF LANDSCAPE GARDENER.—After a spree among the catalogs, which, needless to say is the worst possible way to begin a garden although the most popular method, the builder must realize, that a garden, to be beautiful, must be correct in scale, proportion and detail. It is one thing to pass intelligent, critical judgment on a work but quite another thing to create it. An artist knows what to bring in and what to leave, without the gate.

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WINTER MAINTENANCE

BY K. N. MARRIAGE

HYBRID TEA ROSES

THE hows of wintering Hybrid Teas reminds one of Pope's watches "none just alike, yet each one trusts his own". There is one method successful in Colorado, and in other regions of wide range in winter temperature:

(1) As soon as wood is ripe, usually early November to mid-December, cut tips down to six inches.

(2) Remove all leaves and tops. Burn these if Black Spot is evident.

(3) Water the ground thoroughly.

(4) Spray the ground around the plants with Fermate, pour Black Leaf 40 solution around the crowns and dust with Lead Arsenate.

(5) Cover each plant with one-fourth to one-half bushel of peatmoss and rotted dairy manure pulverized and previously mixed and moistened.

(6) Cover the beds with one of the following. They are given in order of choice:

Spruce or Fir branches

Maple leaves held down with woven wire

Corn stalks

Excelsior held down with wire

Now for the whys. Rose stems two or three feet high waggle in the wind, loosen the mulch and may expose the plant.

Water to ensure that roots remain moist all winter.

Remove all leaves and tops to eliminate possible hold-over of fungus and similar pests.

Spray the ground to discourage spores of fungi, eggs and larvae of uninvited guests.

Peatmoss and manure mixture retains moisture and keeps temperature

equable. Manure for enrichment. Peatmoss to prevent rot. Both are excellent to spread over surface for a mulch next spring.



Spruce or Douglas branches (not a mixture of both) keep out winter sunshine, allow free air circulation and are pleasant to the eye. There's a "twick" to putting these on; they resist strong winds and they look better if imbricated—like shingles on a roof—the tip of each branch overlapping the stem of the last one. Maple leaves are light and curly. Poplar, Cottonwood and Apple and other such leathery leaves are taboo; they mat down and exclude air.

Cornstalks do the job but they may harbor mice and they look so dull and dead.

Excelsior is excellent except for appearance. One woman whose Rose Garden is in full view from living room windows dyed excelsior green and kept it from year to year, but this was in pre-war days.

Sprinkle last thing to get the whole business settled into place and to be sure there are no dry pockets.

May we have some other methods of Rose care for winter discussed?

RECENT ACQUISITIONS TO THE LIBRARY

Our library at Horticulture House is open Monday through Friday afternoons. We hope that our members will take advantage of the comfortable reading conditions and the fine collection of books, old and new.

- | | |
|--|--|
| Handbook of Narcissus—E. A. Bowles | What Kinda Cactus Izzat—Reg Manning |
| Exploring Our National Parks and Monuments—Devereux Butcher | Gardens and Gardening—edited by F. A. Mercer |
| Charm of Gardens—Dion Clayton | Florilegium Renovatum — Matthaeus Merianus, published in 1641 |
| Calthrop | Garden Flowers — Robert M. McCurdy |
| Designs for Outdoor Living—Stewart G. Chase and O. J. Trenary | English Pleasure Gardens — Rose Standish Nichols |
| Flowers, Their Arrangement—J. Gregory Conway | Royal Palaces and Gardens—Mima Nixon |
| Dykes on Irises—edited by George Dillistone | Selected Flower Arrangements of the Ohara School—Koun Ohara. |
| Fungous Diseases of Plants—Benjamin Minge Duggar | Bounty of Earth—Donald Culross Peattie and Louise Redfield Peattie |
| Plant Physiology—Benjamin M. Duggar | A Prairie Grove—Donald Culross Peattie |
| Ferns of North America — Daniel Cady Eaton | American Acres — Louise Redfield Peattie |
| Trees of Great Britain and Ireland—Henry John Elwes and Augustine Henry | Japanese Flower Arrangement for Modern Homes—Margaret Prelinger |
| World Grows Round My Door—David Fairchild | Alpine Flowers—Paul A. Robert |
| Growing Bulbs for Winter and Spring Blooming—Maurice Fuld | Complete Book of Flower Arrangement—F. F. Rockwell and Esther C. Grayson |
| Book of English Gardens — M. R. Gloag | Pay Dirt—J. I. Rodale |
| Gardening on Nothing a Year—Mary S. Griffith | The Tree Book—Julia E. Rogers |
| Illustrated Encyclopedia of American Wild Flowers — Ethel Hinckley Hausman | Rock Gardening for the Small Place—Ezra C. Stiles |
| Miniature Alpine Gardening—Lawrence D. Hills | Wild Flowers of the Rocky Mountains—Emma Homan Thayer |
| Plant Propagation—Alfred C. Hottes | Handy Book of the Flower Garden—David Thomson |
| Handbook of the Trees of the Northern States and Canada—Romeyn Beck Hough | Treatise on the Insect Enemies of Fruit and Fruit Trees—Isaac P. Trimble |
| Soil and Health—Sir Albert Howard | Succulents, Other than Cacti—A. J. van Laren |
| Svenska Fjällblommor—Torsten Lagerberg (Sweden) | Small Country Houses of Today—Lawrence Weaver |
| More Small Italian Villas and Farmhouses—Guy Lowell | |

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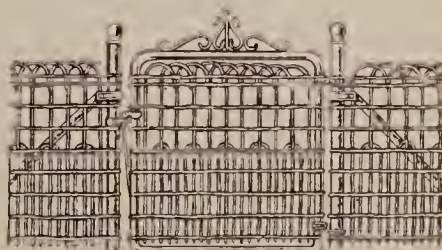
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Planned originally for a screened background with the shrubs and evergreens to grow naturally, with only slight pruning to keep them from interfering with each other.

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THE initial planning and planting of grounds for making a setting for one's home is only the beginning of the picture—from this point on the design depends entirely upon upkeep. There is no forgetting trees, shrubs and perennials. They will grow, you know, and it is usually a sad day if they don't. This means trying to visualize what the designer of the picture had in mind, so that it can be kept to that picture though years pass. It would indeed be a very shocking thing to go off for awhile and come back to find the dining room table bursting out in five new legs—shoving the chairs hither and yon—the chairs having in turn had ideas of their own to sprout new arms. Your garden is not static, as we trust well behaved furniture is, so don't be surprised when things don't always stay the same. You are the one who has control—don't let the plant material take it away from you.

Do a little pruning *every* year at the proper times and places, and you will enjoy the picture as the years develop it. Many lovely plantings have been absolutely ruined by ignorance or carelessness of proper maintenance; then when the day of reckoning comes, what a toll has to be paid to re-create the original setting. Warning! Know what to do and if you don't know have a consultation with one who does know. Set aside something in your budget for maintenance. It is a shame to spend money on good plant materials and let them be driven to unsightliness through your neglect.

This is what happened—soil was mounded up 18 in. around stems (why I don't know) left shrubs with no character; all look like spotty umbrellas.

Drawings by Jack Harenberg





The Green Thumb

FEBRUARY, 1948



OUTDOOR PLANS, 1948

The Outdoor Program committee is planning a full schedule for this summer, starting with April and continuing through October. There will be several wildflower trips for the general membership, at least a spring and fall bus trip around the city parks, several expeditions of botanists to check the plants in our new Botanical Reserves, and four or five more extensive collection trips into the little known areas of the state. If you have any preferences as to dates or kinds of trips please call and let us know so that a definite schedule may be made to suit the largest number of members.

JACK HARENBERG SEZ

It's sure to snow this month.

DON'T be careless about knocking snow off evergreens, especially when it has frozen on after a little thaw. Much damage can be done to evergreens when they are in this condition.

DON'T pile snow on low evergreens when shovelling walks.

DON'T let snow sliding off the roof weight down and break low evergreens.

DON'T neglect evergreens if they are broken by snow. If you are not capable of taking care of them yourself call in an expert—but do it at once.

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ORCHIDS TO GEORGE A. CARLSON

Away back in 1912 when George Carlson was an awkward young boy working for the Denver Parks Department, S. R. DeBoer saw something in him and told him one day that if he paid attention and tried to learn his job someday he might be park superintendent. Mr. DeBoer's prophecy has proved true for George Carlson has recently been appointed Denver Parks Superintendent.

We are proud to have George receive this honor, for no one in the state is more deserving. He has spent his life since that day in 1912 in preparing himself for this job. He was most recently in charge of the Colorado Springs parks, and from the number of Colorado Springers who regretted his leaving we can judge that he made good there.

George also made quite a record for himself in Colorado Springs during our membership campaign by bringing in around one hundred new members to this Association by his own efforts. We shall see some improvements in our Denver parks soon as everyone just naturally likes to work with him. We hope that George can line up a few interested young men whom he can train and inspire to be ready in the next generation to provide horticultural leadership.

FEBRUARY PROGRAMS

There will be no regular Friday evening programs at Horticulture House during February as the Home Owner's Landscape School will be held each Friday evening in February at The Evans School as announced on the inside back cover of this issue.

Picture on cover of Longs Peak as seen from near Broomfield, Colo.

Photo by Charles J. Ott.

The Green Thumb

A Bulletin of the
COLORADO FORESTRY AND HORTICULTURE
ASSOCIATION

Organized in 1884

GEORGE W. KELLY, Editor
MISS ALICE WOOD, Assistant Librarian
MRS. C. A. BARBOUR
Editorial & Advertising Asst.
L. C. SHOEMAKER, Treasurer and Custodian
MRS. STELLA D. HARE, Membership Secretary
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"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

Published Monthly.

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THE WEEK-END GARDENER

I STOPPED by the nursery today and picked out some beautiful plants I saw there. Now I wonder where I should plant them. My garden is almost full now. The lower end has been in a long time though, and the plants are beginning to get overgrown, and do not give the effect originally planned. I never did like it much anyhow. I'll call over the Oldtimer and see what he can suggest.

Oldtimer says that I have the cart before the horse; that I should plan for the effects wanted and then order the plants most suitable to give those effects. Now should be a good time to make a definite plan for the remodelling that I want, then when spring comes and the ground thaws out I will know exactly what I want and where it is to go.

It will be weeks and weeks before spring, and I probably will not be able to do all the work that I want even then. Oldtimer says that I should make a plan on paper so that I will not forget the things I have decided on, and so that the completed job will all fit together regardless of when the separate parts are planted. I'll go out now while the sun is warm and measure the garden and the surrounding fences and buildings; then I can draw it all up to scale this evening.

I must first decide just the features that I want. There should be lots of flowers. Oldtimer says that they should be massed in front of the shrub screens rather than be planted in beds cutting up the lawn. I expect that the first thing is to plan on a shrub screen next to the alley, and a good tall tree to shade the southwest corner of the house. Let's see, I want a pool and Mom wants a rockery. We'll compromise with a rockery. We both want roses and a bird bath. How about a formal bed of roses around the bird bath at the end of the long grass plot? That should look fine, but we will have to move the clothesline to the other side of the yard to keep from having to look through shirts and socks to see the garden. That is a good start. I'll do the rest next week.



RAMBLING OBSERVATIONS OF A ROVING GARDENER

Reprinted by Permission from Horticulture

High prices for foods this year have made many a home vegetable gardener pleased with himself for his decision last Spring to stay with his vegetable patch—provided he did the work himself and did not pay for labor. Undoubtedly, he saved himself a few dollars.

According to Andy Wing of the National Garden Institute, the high cost of living—if it continues—will result in a mass development of vegetable thrift gardening next Spring.

One of the first things proper grazing management does for a ranch is to build up an absorbent layer of living green matter underlain by dead decaying litter from past years' grass. With such a mat, Soil Conservation Service technicians have learned, a range can absorb nearly six times more rainfall than an area where grass was poor. Raindrops disintegrated into harmless spray when they hit the good mat; the beating drops caused erosion on the poor spots. It's false economy not to keep the grass at its maximum.

B. W. ALLRED

Reprinted by Permission from The Land

LANDSCAPING YOUR HOME

BY PAUL BRADFORD

WITH spring and all its coming beauties and duties so close at hand it is well that you give some careful thought to your garden and to the horticultural materials that you are expecting to install in it this season.

You may be one of the lucky new home owners and, if that is true, it is doubly important to make early plans if you expect to secure the services of a competent nurseryman or landscape contractor to do your work at the proper season. The universal increase in building has made heavy inroads on an already dwindling supply of nursery stock.

Quality is as important in nursery stock as it is in furniture or clothing. If you are normally observant you can readily see the difference in plants. Good shrubs, for instance, should usually have five or more sturdy stalks or canes. If you cannot find garden or landscape materials in the sizes you want, always accept a smaller item. Don't sacrifice quality for size.

A combination of evergreens and shrubs will prove much more attractive than if either are used by themselves. When selecting evergreens, look for rich color tone and density of growth. Properly grown junipers of high quality will be thick, luxuriant and lovely to behold.

The front of your home is your face to the world; you will want it to be as attractive as possible. Think carefully! Consider how your plantings will look throughout the year. Remember that the trees and shrubs you plant this spring will change with every coming season. Will they outgrow the plan you have in mind? If so, can they be controlled by proper pruning?

Don't be satisfied with the same things your parents used. Many of the new plants are much superior. Shrub roses have long been favorites of mine. In the small shrub rose group, the floribundas are new and beautiful. By choosing carefully it is possible to have pleasing color contrasts in the shrub border in the dormant as well as in the blooming season.

Different architectural designs and patterns require a wide variety of landscape materials and arrangements. Willow or cottonwood trees, for instance, should not be used on a small lot. Blue spruce requires great care. Only use Chinese Elms if you need quick, cheap shade. Bolleana Poplars are now so badly diseased that it is not wise to plant them. If you can, use at least one good hardwood tree for a specimen; you will be proud of it as it develops into a living monument of beauty.

Finally, I think that landscaping should fit the individualities and personalities of you who live in the home, and if you plan and order early and carefully, you will be happy as your garden grows.

RAKING LEAVES

My energetic neighbors rake
And sweep for hours and hours,
Gathering up the leaves that fall
Upon the grass in showers.
I, being less industrious
Let the brown leaves stay
Knowing that presently the wind
Will whisk them all away.

MARY F. LEGLER

From Friends of our Native Landscape, Autumn 1947.

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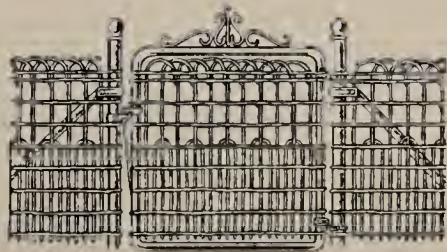
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TREES AS LIVING THINGS

By JOHN W. SWINGLE

John W. Swingle has recently moved to Denver and is establishing a tree service here. The practices that he recommends for tree preservation are based on the latest development by the best experts of the East. Here are some of his ideas that are nevertheless well worth consideration.—Ed.

TREES, as well as human beings, can suffer pangs of starvation, illness and accidental injury. Like human beings, they readily respond to proper treatment and care. Trees are infected by insects, bacteria and many communicable diseases which can be cured and prevented if they are given prompt and intelligent care.

More destruction is caused by improper pruning than by insect and storm damage. Little do many of us realize that tree wounds—man-made or accidental—are just as susceptible to infection as those caused by the amputation of an arm or a leg from the human body. Great care must be exercised in the removal of branches and limbs from a tree in order to prevent future cavities. Cuts should be made flush, cauterized and waterproofed. In many instances it is absolutely necessary to retrace the bark to promote ready healing.

Some of us will ask ourselves why sterilization of wounds is necessary. But if you will examine the wounds after a few days or weeks you will notice that many checks or crevices have formed, caused by the rapid dehydration of the green wood from exposure

to the elements. These checks act as traps and moisture chambers for the fruiting bodies of the wood-rotting fungi to which they are constantly exposed. These spores, after lighting, germinate and the mycellium of these fruiting bodies penetrate into the healthy wood thus causing it to decay very rapidly. Therefore sterilization and waterproofing with a proper pruning compound is imperative. Large wounds should be watched each year until they are entirely healed over. Sterilization of the tools is also important as many times the saw may have been used on an infected limb and the bacteria may be immediately carried to the healthy exposed area.

Walk out onto the lawn in a leisure moment. Examine your trees carefully, paying particular attention to the large wounds and small stubs which never heal. Ask yourself if in five, ten or fifteen years your trees will be healthy or they will be ugly and gnarled from neglect and improper care? A small, improperly made wound can be the source and entry of diseases that will destroy the whole limb and, in many instances, the entire tree.

Before going back to your house consider this fact—your trees have not the advantages of those growing in their natural environment where they can feed on decayed vegetation and are better able to resist the attacks of insects and injury. It is imperative to maintain by artificial means the health of trees growing under lawn conditions where they must compete with the grasses and shrubs for their very existence. Proper

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fertilization applied by the punchbar method, in holes 14 to 15 inches deep, is vitally necessary to maintain their health and vigor.

Spraying is also vitally important to protect your trees from blights, sucking and eating insects which not only mar the appearance of your trees but sometimes destroy them. If you are not in a position to consult a tree expert, you should get in touch with the Department of Agriculture for competent advice.

Of all growing things trees contribute most to the comfort, beauty and charm of your home. Keep them looking natural by removing as few live limbs as possible, except in the case of the Chinese elm where thinning of the branch ends is necessary to prevent sleet damage.

Remember this—when once you have had your trees treated in a proper manner they can be maintained from year to year at a very low cost. It is wise to pay particular attention to the young trees so that they may develop into beautiful and healthy specimens.

Can you visualize how utterly ugly and naked this world would be without the grace and beauty of the stately trees? Think how they contribute to the joy and comfort of our daily living. It may be a gnarled apple tree growing on the side of a hill where in the spring the blossoms and fragrance will cheer and inspire us. It may be the cherry tree whose blossoms bear the fruit that are so inviting to our feathered friends. It may be the walnut tree from which our saucy squirrel gains its sustenance. Then again it may be the graceful elm or the giant cottonwood which adds so much to the landscape of our homes. Trees, wherever they may be, contribute something to each of us. Give them the best of care!

HORTICULTURAL NOTES— MAINTENANCE

By K. N. MARRIAGE

Mulch the ground around fall planting and spread mulch out for some distance to keep the surrounding ground moist.

"*Sphagnum Moss as a Seedling Medium*" (A first-aid to gardeners who are troubled with damping off of seedlings.) Pamphlet can be ordered from American Horticultural Society, Washington Trust & Loan Building, Washington, D. C.—25c. In this dry air sphagnum is an effective sponge, holds moisture well in seed pots and flats.

Fire blight and Cedar apples, two fungi that were such a pest this past summer on Apple and Juniper trees, have probably provided more trouble for next season by depositing spores in the ground around them. Spraying the surface of the soil below the infected trees with Fermate, or dusting with Copper Carb, both fall and spring will help to check their becoming active.



"All my life it has seemed strange to me that the vast majority of human beings are content with only hearsay accounts of the wonders found 'through the microscope'. It is a breath-taking world, filled with myriads of strange and fascinating objects which the naked eye could never see. Any one who has never looked thus into the heart of a flower has never lived.

"Personally I can not imagine existence in a family where the parents are interested only in a social life, but I feel sure that it would be very boring. Maybe that is why some boys get into hot water. When absorbed in the world of growing things, even a boy can be too busy to make trouble."

HOW THE NATIONAL FORESTS CAME TO BE

BY DON BLOCH

TO those at Plymouth the forests were a barrier to progress. Their world was bounded by the sea and the woods. To expand, there were the forests to conquer.

So the forests fell.

For each century since white men first knew them, a million acres of our forests have fallen. When there was plenty, there was no need to save. The forests were there, all about them. Men used wood as they required, for the day.

"Conserve! Why?" asked the Colonists, indifferent.

Then came canalboats, railroads, newspapers—homes, for the pioneers swarming through the frontiers and

down the waterways. Inland towns began to assemble; wood was needed for fuel and building. Forests were felled and fences erected when farms were plowed. Down came the forests; up sprang towns built on and of their skeletons.

A hundred years—a million acres.

Two hundred years—two million acres.

Three hundred years—three hundred million acres of forests down, mainly to tower again in man-made structures. Billions of trees — cut, burned, rotted away but gone.

Now, today: "One in every thirteen of the remaining six hundred million forested acres of the Continental United States is a National Forest acre, administered for the public good by Forest Service."

Briefly, how did this come about?

Stout pine spars for masts and good oak for ships' bottoms have always linked the forests with the early destinies of great nations. It was so on this continent.

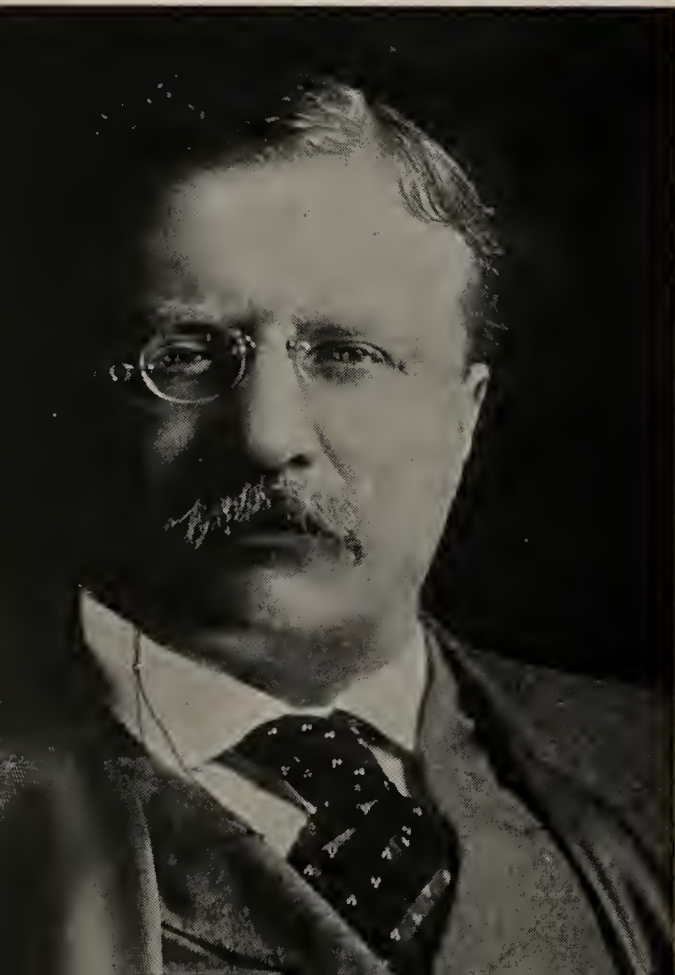
Perhaps the first forest conservation statute passed in America was an ordinance of the Plymouth Colony in 1626. It set forth the embarrassments liable to obtain through a lack of wood, mainly for fuel, declaring that "no man shall sell or transport any timber whatsoever out of the colony without the approval of the governor and council."

More than a century passed, however, during which there was only sporadic legislation concerning forests before we became aware, as a nation, of the possibility of a general shortage, now involving ship-construction timber.

The national eye-opener was Al-

Theodore Roosevelt

Photo by U. S. Forest Service.



gerian pirates. Their continued depredations on our merchant vessels up to 1794 led to concerted demand for a navy. That year the President was authorized to provide for several vessels. In 1799 Congress appropriated \$200,000 "for purchase and reservation of timber or timber lands suitable for the navy."

A succession of acts, including the 1825 "live oak" legislation and the timber trespass law of 1831, resulted in a total of more than 264,000 acres of live oak land in the southern coastal states being set aside from the public lands and about 2,000 more acres purchased from private owners. Other acts in the 1840's were aimed at curbing timber depredations in Michigan, Wisconsin and Minnesota pine forests.

Between 1860-70 the tree-planting idea became a popular movement in the prairie states. In 1873 the Timber Culture law "to encourage the growth of timber on the Western prairie" was approved. Under the contemporary Homestead Act a man couldn't get a good deed to his quarter section of the public domain until he had planted and started growing, successfully, a certain number of timber trees.

Then came 1876, the first of the two most important dates in the history of the national forests.

In that year a rider, attached to the free-seed clause of an enactment, provided that \$2,000 be expended by the Commissioner of Agriculture for a purpose new to the nation. It was to compensate "some man of approved attainments who is practically well acquainted with methods of statistical enquiry, and who has evinced an intimate acquaintance with questions relating to the national wants in regard to timber, to prosecute investigations and inquiries, with the view of ascertaining the annual amount of consumption, and exportation of timber and other forest products, the probable supply for future wants, the



Photo by U. S. Forest Service.

Roosevelt National Forest. White Pine Fire Look-out Tower near the Buckhorn Ranger Station.

means best adapted to their preservation and renewal, the influence of forests upon climate and the measures that have been successfully applied in foreign countries, or that may be deemed applicable in this country, for the preservation and restoration or planting of forests; and to report upon the same to the Commissioner of Agriculture to be by him in a separate report transmitted to Congress."

The man chosen for this stupendous task was Dr. Franklin B. Hough of Lowville, New York. At a meeting of the American Association for the Advancement of Science, of which he was a member, in August of 1873, Dr. Hough had presented a paper on "The Duty of Governments in the Preservation of Forests." Its message and his subsequent reports really



Photo by U. S. Forest Service.

Roosevelt National Forest. Scene looking northwest from the Red Rock Cabin near Brainard Lake.

brought the Government face to face with the forest problem for the first time.

From his reports fell the seeds later to burgeon into the national forests and their guardian, Forest Service.

There were precious few direct and significant results for another decade. To carry on his investigations here and abroad, Dr. Hough received, beyond the initial appropriation, annual sums of \$2,500—and even these modest sums had to be transferred from other funds. In 1881, what was the “forestry agency” under his chief-
tainship, was reorganized into an administrative division and regular appropriations came through from then on.

Finally, “varying tides of bill and law and the cumulative effect of public opinion” resulted in the vital and fundamental act of March 3, 1891—

the second important date in national forest history.

Among other provisions beneficial to the development of government forestry in America, was Section 24—inserted at the last minute, almost as an afterthought. In fact amounting to an eleventh hour reprieve, protecting the remaining timber on the public domain from rather certain destruction, it provided:

“That the President of the United States may, from time to time, set apart and reserve, in any State or Territory having public land bearing forests, in (sic) any part of the public lands wholly or in part covered with timber or undergrowth, whether of commercial value or not, as public reservations and the President shall, by public proclamation, declare the establishment of such reserves and the limits thereof.”



Photo by U. S. Forest Service.

Holy Cross National Forest. Effects of fire after logging.

The national forests were built up on this foundation.

Within a few months after the enactment of this law President Harrison had withdrawn from the public

domain some two and a half million acres of timber land in Wyoming and Colorado. Within another two years these withdrawals had increased another fifteen million acres.

Pike National Forest. A case of advanced gully erosion.

Photo by U. S. Forest Service.



In 1898, more than three centuries after Plymouth, the public consciousness woke with a start. It became aware, fully, of the rapid destruction of forests and the damage to watersheds caused by promiscuous cutting and fire. An investigation of these conditions in the forests left in the East and South was undertaken.

The enactment of the Weeks law, in 1911, resulted. It created the National Forest Reservation Commission, and authorized the purchase by the United States Government of lands for the "protection of the watersheds of navigable streams." With the first purchase in 1913 began the building up of a chain of national forests through New Hampshire, Maine, Pennsylvania, Virginia, Tennessee, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Oklahoma and Arkansas. There were already public-land forests in Arkansas, Florida, and Puerto Rico.

On June 7, 1924, was passed the final important legislation affecting the national forests. This was the Clarke-McNary Act which made pos-

sible an impetus in the matter of forest-fire protection, especially in the way of cooperation and state aid. It authorized an annual appropriation for fire protection assistance to the states, and for the development of farm forestry. It provided for the study of forest land taxation methods in the states, and for assistance to farmers in forest planting and timber growing through Federal and state cooperation. It provided means for recommending to Congress, for additions to the national forests, suitable portions of the public domain. It further authorized the President to establish, as national forests, suitable portions of other Government reservations.

So today, the national forests embrace within their boundaries a net area of 180 million acres, in 42 states, Alaska, and Puerto Rico, and a Federally-owned timber stand of 518 billion board feet. These forests are the ward of Forest Service whose duty it is to conserve them and, at the same time, so use them as to realize the greatest possible lasting service to the greatest number of people.

WHAT IS ADLUMIA FUNGOSA? WANT TO KNOW?

OUR Association has many, in fact a majority, of members who term themselves "just plain gardeners". A "just plain gardener" has to have knowledge that covers a lot of territory and is, of necessity, limited in any one line.

The knowledge, however, of WHERE specialized information can be obtained is invaluable to the "just plain gardener". And what is more fun than to say, "I grew this myself" or "I made this myself" or "it was hard work but we rescued this plant just in time". The satisfaction of

doing with one's own hands is a feeling of which we may be justly proud.

Our library at Horticulture House has this WHERE knowledge. Here have been collected the best, the latest and the most usable books for the "just plain gardener". The use of the library is very informal (overalls as well as other business suits appear). The staff in charge can answer questions and does so very willingly, often saving a member time, expense and trouble by suggesting some small simple operation that the "just plain gardener" can perform.

The books deal with a wide variety of horticultural subjects, even diverging to recipes for meat seasoned with herbs, special "toadstools" au gratin, herbal cocktails and other ways in which we would not think of using plants. Then too, there are ideas and information on photography, landscaping, architecture, bees, birds, wild flowers and fruits; other books dealing with floral displays, soil and water conditions, evergreens and their habits. You will also find a copy of your favorite garden magazine among our large collection of publications from other states.

From time to time the library has live specimens of horticultural interest on display in addition to a herbarium that is materializing with speed. And

there is a whispered rumor that some 500 to 1000 varieties of seed will be on our shelves for display in the near future.

Whether it's roses or rust, you'll find what to do about them in the place WHERE you can read, learn and even get a little garden gossip, WHERE you meet people who *do* as well as people who *know*. Also our parking lot at the rear of Horticulture House is available to members, thus solving the WHERE of parking.

Oh, yes — "Adlumia Fungosa" — a member of the Fumitory family, with the Bleeding Heart. Common names are Climbing Fumitory, Mountain Fringe and Allegheny Vine.

Elsa T. Laybourn

THE WEEK-END GARDENER

IT sure is fine weather this Saturday afternoon. We have had some severe weather but I guess that spring is here now. I'll take a walk around the garden before I even go in to say hello to Mom. I believe that the frost is all out here on the south of the house—and look at these green sprouts breaking through from the tulips. Golly, spring must really be here. I'll have to get out my garden clothes and begin to take off the winter coverings so that these things can grow. "Hi, Oldtimer, come in and look at my garden and all the green sprouts coming. I'm going to get rid of all this trash covering up the perennials and roses." "What, You would wait a while, This is only the middle of February." "But, it is so warm and the sprouts are coming." OK I'll wait if you say so."

I'll have to do something while I am in this spring mood. How about starting some seeds in flats in the south window? I'd like to get a head start with my Zinnias and Marigolds and tomatoes this year. While the ground is thawed out a little I might scatter a few seeds of the self-sowing annuals like Larkspur, Sweet alyssum, Cosmos and Portulaca. Then they will be ready to come when the weather really warms up.

Now should be a good time to bring in a few twigs of forsythia and let them bloom out in a vase of water. I might also try some limbs from the wild plum and the Garland spirea.

While I am at it I'll just go over the shrubs and trim out a few of the branches broken or bent down by the snow and clean up some of the dead limbs and stubs. That should make them look neater, but I'll not take off enough to interfere with the blooming next spring.

If I can't take off the winter coverings yet I can clean up some of the dead hollyhock and shasta daisy stems and make the garden look neater.



Library and Meeting



t Horticulture House.

STREET TREE PLANTING

PREVIOUSLY we have made suggestions for planning street tree planting and indicated the trees suitable for use in various locations. The present subject in this series is the actual planting of the trees.

Careful consideration should be given to securing good trees of the kind decided upon. Usually it is well to obtain these trees from as close to where they are to be planted as it is possible to secure the right varieties.

If you must dig your own trees, they should be carefully handled so that the roots have no opportunity to dry out. It is worth every effort to dig trees with a large proportion of roots. No definite rules can be made for this, as root systems vary greatly in different trees. In general the slow-growing trees have deep roots and are difficult to transplant while the fast-growing trees have shallow roots and are easy to move. Walnuts represent the one extreme with only a few very deep roots, while willows are the opposite with many fine, shallow roots. Actually a tree should have about a two-foot spread of roots for every inch diameter of the trunk. Some roots, such as those of the birch, are very easily dried out so they should be protected from the sun and wind at all times.

Generally trees will be dug and delivered by the nurseryman, in which case all you can do is to check that they have sufficient roots and that they are not dried up nor badly damaged in digging and handling.

In most circumstances it is the best policy to plant a medium sized tree. That would mean one about 2 or 3 inches in diameter and probably 10 to 20 feet high. Smaller trees can sometimes be used but are more difficult to protect and take longer to develop. Larger sizes are very much

more expensive and transplant with greater difficulty. Street trees should all be of specimen quality with straight trunks for at least 7 feet in height, as they should be trimmed high enough to be seen under easily.

It is well to have all holes laid out and dug before the trees are brought. This will allow time to improve the soil in places if necessary, and allows you to plant the trees with a minimum exposure of their roots to sun and wind. A good rule in hole digging is "the harder the hole is to dig, the larger it should be". In other words there should be a hole large enough not only to permit the roots to spread without cramping but should also provide loose soil beyond the roots so that the new rootlets may grow readily at first. If poor soil or old fill material is encountered, this should be removed and good soil brought in. This is very important, as it affects the whole future life and growth of the tree.

Since most street trees are planted in a parking strip along the street it is very important that they be set exactly in line. Stakes should be set in advance to align them. Trees should be set at approximately the same depth as they were in the nursery. Some trees may not mind a little difference in depth but most of the good, slow-growing trees are very sensitive to even a few inches change.

Before planting, the roots should be inspected and any damaged ends trimmed off smooth. The roots should be spread out naturally in the hole and the dirt filled in carefully so that the roots are not jammed out of place. If a hose is available it is better to fill in loose soil until the hole is almost full and then work the hose down in the hole and water from the bottom up. This insures no air pockets. This



Photo by Jack Harenberg.

Proper use of small trees on little travelled street. Native Hawthorn at home of Mrs. L. V. Woods, 901 So. Elipse Way.

is a good practice even if it is necessary to water with a bucket. DO NOT PACK the earth as it is filled in unless it is impossible to water at once. Otherwise this will allow "bridges" of packed earth to form, leaving air pockets beneath. This rule of packing the earth around newly planted trees was developed in eastern or European countries where the soil is damp and rains can be expected frequently. It is one of those rules that we have had handed down from father to son and is not adapted to our climate.

After watering in, the trees should be checked again for line, depth and plumb. Then it is usually best to brace the tree to prevent it being pushed or blown out of plumb until there is enough new growth on the roots to anchor it; bracing three ways is the most efficient method. Especial care should be taken to pad the brace wires where they go around the tree. Sections of old hose are good for this. DO NOT wrap wire or rope tightly around the tree trunk or limbs. Any brace wires should be shifted several times through the season and removed before the second year's growth.

Some trees, such as Mountainash, Linden and Black cherry, have bark

which is tender and subject to sunburn in our climate. The trunks of these trees should be protected by a board shade on the southwest side or by wrapping loosely with some material like burlap or screen wire. These wrappings should not be tight and must be inspected frequently to see that they do not restrict the growth.

Almost all trees should be trimmed back carefully at the time of planting. This is to shape them and give them a good framework and also to balance the top with the restricted root system unavoidable in a transplanted tree. Different kinds of trees require different treatment but usually the long branches may be cut back part way and some unnecessary limbs removed completely.

A week or so after proper planting, watering and bracing, it is a good idea to check the trees to see that all these things are still in order; usually they will need another thorough watering by this time. After this no rules can be made for watering but the soil should be tested to be sure that it is moist as far down as the roots go. The condition of the surface matters little but the lower soil must never become too dry. On the

other hand it is as bad to keep the soil soggy-wet as not to give enough water. There must be a nice balance between water and air in the soil for the best plant growth. This balance varies with different kinds of soil and trees and must be worked out by experiment rather than by rule.

When trees arrive before the ground is ready to plant them they should be "heeled in" which is simply covering their roots with moist earth. This is usually done by digging a trench deep enough to accommodate the roots; then spread the trees out in this trench, covering the roots and keeping them watered. If trees are very dry they may be covered completely with damp soil for a few days to freshen them up.

The spring season is usually best for transplanting the slow-growing shade trees. This is the period from the time frost is out of the ground until the leaves appear. Fall may do for less particular trees. The fall planting period is that time from the falling of the leaves until the ground freezes. Various trees move more safely at different times. Birch should be moved only in that week of spring when their leaves first begin to show green. Honeylocust may often be moved when quite out in leaf. Some advocate moving Hackberry in the fall.

Evergreen trees are seldom used for street planting as their beauty is usually spoiled when they are trimmed up sufficiently to make them safe for street use. When evergreens are used they require a very different treatment from deciduous stock. Their roots are so sensitive to exposure to air and sun that they are always dug with a ball of earth of a size appropriate to the size of the tree. It is important to handle this ball of earth carefully so that it is not broken. The burlap covering this ball and holding

it together is left on until the tree is set in its place. The soil is then filled in until the hole is almost full and then the burlap is cut from the top of the ball, folded back and covered with dirt. The burlap will rot away within a few weeks. Where it is desirable to have larger trees planted to make an immediate effect, they are usually moved with a large ball of earth as in the method with evergreens. This is an expensive process requiring special equipment and men with the know-how!

Strong fertilizer must never be used around the roots of a newly transplanted tree. A small amount of well-rotted manure or leafmould or peat may well be worked into the soil as it is thrown back into the hole but it is more important to have good, clean soil. Any necessary fertilizing can be done later from the surface.

A small amount of a balanced fertilizer may be broadcast on the surface in later years and watered in or, in the case of larger trees especially, it is better if applied in holes made with a bar at intervals under the spread of the tree. Particular chemicals may be used when some special condition arises, such as using iron sulphate for chlorosis.

During the following years the soil may be cultivated to keep down weeds and to allow a loose surface which can absorb water. Or the surface may be mulched with peat, leafmould, sawdust or some such material, which is even more effective. For the first year or two it is often convenient to leave ridges of earth around the trees which will form bowls and facilitate watering. Later these should be removed and arrangements made to soak the soil thoroughly for a greater distance out from the tree where the new roots are forming. If the soil in parkings is left a little low at first it will make watering easier.

THE LAND IS FOR THE LIVING

By MORRIS E. FONDA

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I believe that conservation implies and means the use of resources in a way that they can be turned over to a succeeding generation in about the same condition we received them—and perhaps even better. But we must correct, wherever it needs correcting, the idea that conservation carries with it an unwritten law that our resources should not be used. The very opposite is true.

During the past two decades I have heard many definitions given for the word conservation. "The intelligent use of resources" some people say and I for one can find no argument with this analysis, except it is quite broad

and all-inclusive. One of the best definitions which has come to my attention is the simple but so true statement, "Conservation is use without waste". This is *literally* true.

The real pay-off, from the long time viewpoint, can now materialize. The soil is still there for the next family. Trees are being replaced with other trees; there is a crop of them at regular intervals. There's still the same kind of fishing that gran'dad enjoyed and a good squirrel hunter can always get his limit. Use without waste—conservation—means a higher cash income for individuals; it strengthens our communities, state and nation; it lays the foundation for healthy social, religious and economic attitudes; and it makes for a better people.

THE WEEK-END GARDENER

WELL, the Oldtimer was right; winter is here again, stronger than ever. I'm glad now that I did not yield to the urge of the sunshine a few days ago and uncover everything. My gardening today will be done in the basement. The way that the wind howls and the snow blows it does not make one feel very garden minded.

Now is just the time to get out the tools and get them in shape for the spring rush. That shovel handle is cracked and tied up in tape where I tried to pry out a stump with it last fall. I'll make a note to get a new handle. The trowel that I got last spring must have been wartime made as it had a habit of folding up on me. I'll throw it away and try to get a good one. The sprayer leaked around the hose the last time I used it. I'll make a note to get a new hose the next time I am in the seed store. While I'm at the seed store I'll get my spring seeds and avoid the rush. I'll also take time to look over all the new tools and gadgets that have been developed recently. Some of them might be useful to me.

Now that I have the tools all out and scattered around I believe that it would be a good idea to make a tool rack something like the one I saw in the picture in the Garden magazine. Then if I can get Mom to put the tools away when she uses them I'll always know where they are. (Of course I *always* put things away).

All the recent garden magazines have mentioned some new insecticide with a yard-long name until I am thoroughly confused. I'm going to take this opportunity to read up on all these new chemicals and be prepared for the fight next spring. This business of controlling insects and diseases seems to become more and more involved. Possibly I should talk to some expert about it.



Photo by Edgar E. Warren.

Beautiful But Dangerous; Heavy Snow on Delicate Branches

OBSERVATIONS ON WINTER TREES OF THE WESTERN SLOPE

By MARY B. PLAISTED

WHEN the leaves are down we can really see the trees. Their graceful shapes against winter skies are easily identified. The huge old Cottonwoods spread wide in arching grace when they grow in fertile soil with plenty of moisture but if they grow in crowded groups as on the river bottoms, or crowded against some steep cliff over a jagged wash, their limbs are apt to be as warped and twisted as are those of timberline trees.

Sycamore plantings here are comparatively new and only beginning to show the piebald pattern of bark characteristic of their maturity. Most of us city folk make the mistake of planting too closely. One Sycamore well grown and properly located would be ample shade for a fifty foot frontage, growing into a much lovelier, more naturally graceful tree than if six were set in a stiff row along the same space. American Elm, Maple and Locust are mis-used in much the same way. In this well watered area there are few shade trees which would not be much longer lived and more graceful if less crowded. The newer types of home building are gradually helping this, although perhaps indirectly.

Properly insulated homes will require smaller plantings since a well insulated house need not depend on summer shade or winter windbreak of tree plantings. Further, beauty, winter light and warmth are increased indoors when plantings are not crowded too closely about the windows. (Here on the so-often-sunny Sunset Slope we are learning the lesson coast dwellers have long learned, to utilize our south facing windows for wel-

coming the southing sun for winter cheer indoors.)

Future plantings will take on a different aspect. Smaller trees, with fewer in the deciduous class, surely will be the planting practice on small city lots. Perhaps the various conifers which react favorably to trimming will help answer this need. Russian Olives and Tamarix will have a place in masking views. The many flowering trees which stay dwarf should be more used. I had the pleasure of seeing a lovely Rose Acacia in blossom on a south-facing lot in May of last year. Entirely unfamiliar to me, it seemed an admirable answer to the need for smaller trees on city lots. Sumac, Ailanthus, Chokecherry and the feathery Mountain Ash, ornamental Plums and flowering Crabs could well be used more. Weeping Birch, Cutleaf Birch and Norway Maple make splendid specimen trees, but like those first mentioned, need "elbow room."

The Willows are too untidy a tree for small lot plantings but winter grace is theirs for all their shagginess. And who ever looked upon or smelled Red Willows in winter without that nostalgic remembrance of childhood their fragrance evokes! Weeping Willows have a certain season of undeniable grace and beauty in spring when their faintly green branches are the first note of color in a landscape still winter drab. I know one spreading above a tall windowed tiny cottage, almost covering it.

Some of our hardy Russian Olives take on the tropic grace of Pepper trees in late autumn carrying closely furled gray leaves and tawny-rose seeds in quite as graceful profusion



Picturesque bare limbs of cottonwood against a winter sky.

as do the Pepper trees. In a green-blue pottery vase against a taupe wall, a slender branch, well seeded and with a few wrinkled gray leaves clinging to its varnished length, makes a winter bouquet which adds warmth and grace to any living room. These bountiful trees are especially to be enjoyed on some raw winter day when storm warnings are out and suddenly whole flocks of robins, bluebirds and bright winged flickers gather to strip the varnished branches. Chinese Elms, fast growing, and until now fairly pest resistant, are being attacked by scale. Through winter they are increasingly lovely as the evenly spaced buds swell to gem the twig-fanned branches.

As I look out of my window the two small, close-clipped evergreens at the steps take on more beauty as winter comes down the hills, and before spring is here each frond edge will be bright chartreuse as new

growth appears.

My neighbor's Scotch Pines and Irish Junipers show splendidly above the close clipped lawn. Two twelve foot Spruce trees brought from the Denver area are reacting better to the change than the first pair imported which did not like either our clinging soil nor their gardener. These trees are more dominant in our out-of-window scene than in their own landscape as they are just far enough removed to show nicely. Slender spired Junipers and blueberried Cedars add the same grace from the tidy home across the street while a huge tumbled mass of Hall's Honeysuckle above a garden bench brightens the grounds about the white cottage facing ours. The same fragrant vine weaves rich green threads through the winter nakedness of our Olive hedge.

Yes, trees are beautiful and interesting in winter, too.

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Arranged more or less in order of their usefulness.

EVERGREENS,

Native

Colorado Spruce 80'
White Fir 60'
Bristlecone Pine 40'
Colorado Juniper 40'
Engelmann Spruce 80'
Alpine Fir 80'
Lodgepole Pine 60'
Oneseed Juniper 15'
Douglas fir 70'
Limber Pine 40'
Colo. Pinyon Pine 15'
Mtn. Common Juniper 5'

Introduced

Scotch Pine 80'
Pfitzer Juniper 5'
Tamarixleaf Juniper 2'



DECIDUOUS TREES,

Native

Narrowleaf Poplar 60'
Quaking Aspen 30'
Smoothbark Poplar 60'
Plains Poplar 70'
Balsam Poplar 40'
Boxelder 40'

Introduced

Siberian Elm 60'
American Elm 80'
White Willow 40'
Common Hackberry 60'
Soft Maple 80'
Russian Willow 40'
Honeylocust 60'
Green Ash 60'
Bigtooth Aspen 40'



WESTERN MOUNTAIN ASH

SHRUBS,

Native

Bush Rockspirea 4'
Boulder Raspberry 5'
Serviceberry 8'
Thinleaf Alder 15'
Bearberry Honeysuckle 3'
Wild Gooseberries 3'
Bluestem Willow 8'
Amer. Red Raspberry 2'
Russet Buffaloberry 3'
True Mountainmahogany 4'
Mountain Ninebark 3'
Mooseberry Viburnum 3'
R. M. Smooth Sumac 4'
Snowbrush Ceanothus 2'
Bearberry Kinnikinnick 1/4'
Bunchberry Elder 4'
Mountain Snowberry 3'
Western Chokecherry 10'
Greenes Mountainash 12'
Beaked Filbert 8'
Wild Currants 3'
Coyote Willow 6'



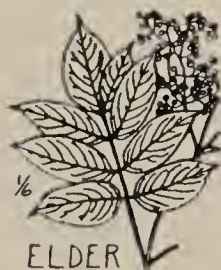
ROCK SPIREA

Rocky Mtn. Maple 10'
American Plum 8'
Antelope Bitterbrush 3'
Pin Cherry 8'
Western Thimbleberry 3'

Skunkbush Sumac 5'
Fendlers Ceanothus 1'
Colo. Redosier Dogwood 6'
Wax Currant 4'
Water Birch 12'
Bush Cinquefoil 2'
Wild Rose 2'
Cliff Jamesia 4'
Shrub Willows 8'
Pachistima 1'
Colo. Hawthorn 15'
Bog Birch 3'
Golden Currant 5'
Creeping Mahonia 1/2'
Scrub Oak 6'
Intermediate Ceanothus 3'

Introduced

Common Lilac 10'
Hungarian Lilac 8'
Siberian Peashrub 10'



ELDER

Vanhoutte Spirea 6'
Tartarian Honeysuckle 10'
Peking Cotoneaster 6'
Korean Barberry 4'
Persian Lilac 8'
Chinese Lilac 10'
Dwarf Peashrub 3'
Frobel Spirea 3'
Common Snowberry 3'
Kashgar Tamarix 8'
Manchu Cherry 8'
Late Lilac 8'
Alpine Currant 3'
Shrub roses, various 6'
Anthony Waterer Spirea 2'
Coralberry 3'
Snowball 8'
Matrimonyvine 4'



Photo by Robert J. Niedrach.

Cliff Jamesia—Jamesia americana.
One of Colorado's most beautiful native shrubs.

VINES,*Native*

Western Virginsbower
 Hop
 Rocky Mtn. Clematis
 Thicket Creeper
 Oriental Clematis

Introduced

Halls Honeysuckle
 Silvertine Fleeceflower

PERENNIALS,*Native*

Penstemons 2'
 Gaillardia 1'
 Solomonplume 1'
 Harebell 1'
 Alliums 1'
 Wallflower 1'
 Thermopsis 1'
 Lupines 2'
 Geraniums 1'
 Sedums 1/2'

Gentians 1'
 Goldenglow 3'
 Twistedstalk 1 1/2'
 Anemones 1'
 Corydalis 1'
 Mertensias 1'
 Thalictrum 2'
 Gilia 1 1/2'
 Sieversia 1'
 Asters 1'
 Violets 1/2'
 Fairybells 1 1/2'
 Alumroot 1/2'
 Purple Fringe 1'
 Valerians 1 1/2'
 Horsemint 1 1/2'

Introduced

Coral Lilies 1 1/2'
 Bleedingheart 1 1/2'
 Iris 1 1/2'
 Shirley Poppies 1'
 Saponaria 1 1/2'
 Gypsophila 1 1/2'
 Phlox 1 1/2'

Hesperis 1 1/2'
 Peony 1 1/2'
 Iceland Poppies 1'
 Shastas 2'
 Delphinium 4'
 Pinks 1'
 Columbine 2'
 Daylilies 2'
 Oriental Poppies 2'
 Tansy 2'
 Statice 2'
 Dahlias 5'

FRUIT,*Native*

Wild Gooseberries and
 Currants 3'
 Serviceberries 6'
 Sand Cherries 3'
 Wild Raspberries 2'

Introduced

Hybrid Plums 6'
 Hardy Crabapples 10'

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February 6, 7:45 P. M.

PLANNING THE HOME GROUNDS:

The General Plan.....	Charles Wilmore	Large places.....	Andrew S. Larson
The Garden.....	Mrs. Aileen Fluken	Small places.....	Mrs. E. R. Kalmbach

February 13, 7:45 P. M.

PLANTS FOR COLORADO HOME GROUNDS:

Evergreens.....	Robert E. More	Shrubs.....	Ed Wallace
Trees.....	Mrs. C. Earl Davis	Perennials.....	Mrs. L. B. Shelby

February 20, 7:45 P. M.

PLANTING AND CONSTRUCTION

Moving evergreens.....	Earl Sinnamon	Planting Perennials..	Mrs. Helen Fowler
Handling stock.....	Wm. Lucking	Preparing Soils.....	Gilbert Pike

February 27, 7:45 P. M.

MAINTENANCE

Trimming.....	John W. Swingle	Insect Problems.....	Paul N. Morrow
Watering & mulching.....	T. R. Collier	Fertilizers.....	Henry Gestefeld

**THE WEEK-END GARDENER**

LAST Saturday we had another taste of winter but today feels and looks like spring again. It is a little muddy on the north side but the south side of the house is dry and the soil just right to work. I saw some neighbors down the street, as I came home, who had the hose out and were watering the lawn. I must ask the Oldtimer about that. Well, he says that there can be no rule about watering but that in the fall and winter, lawns, or anything else, should be watered if they do not receive enough natural moisture. In the spring he says that it is better to hold off watering the lawn until it really needs it. Of course it makes a lawn look fresh and nice to water it but if we always encourage the roots to find moisture near the surface they will not develop deep roots and will be sure to be damaged in the hot dry weather of July and August. I would rather have my lawn look a little brown now than in August, and besides watering less frequently only takes half the time.

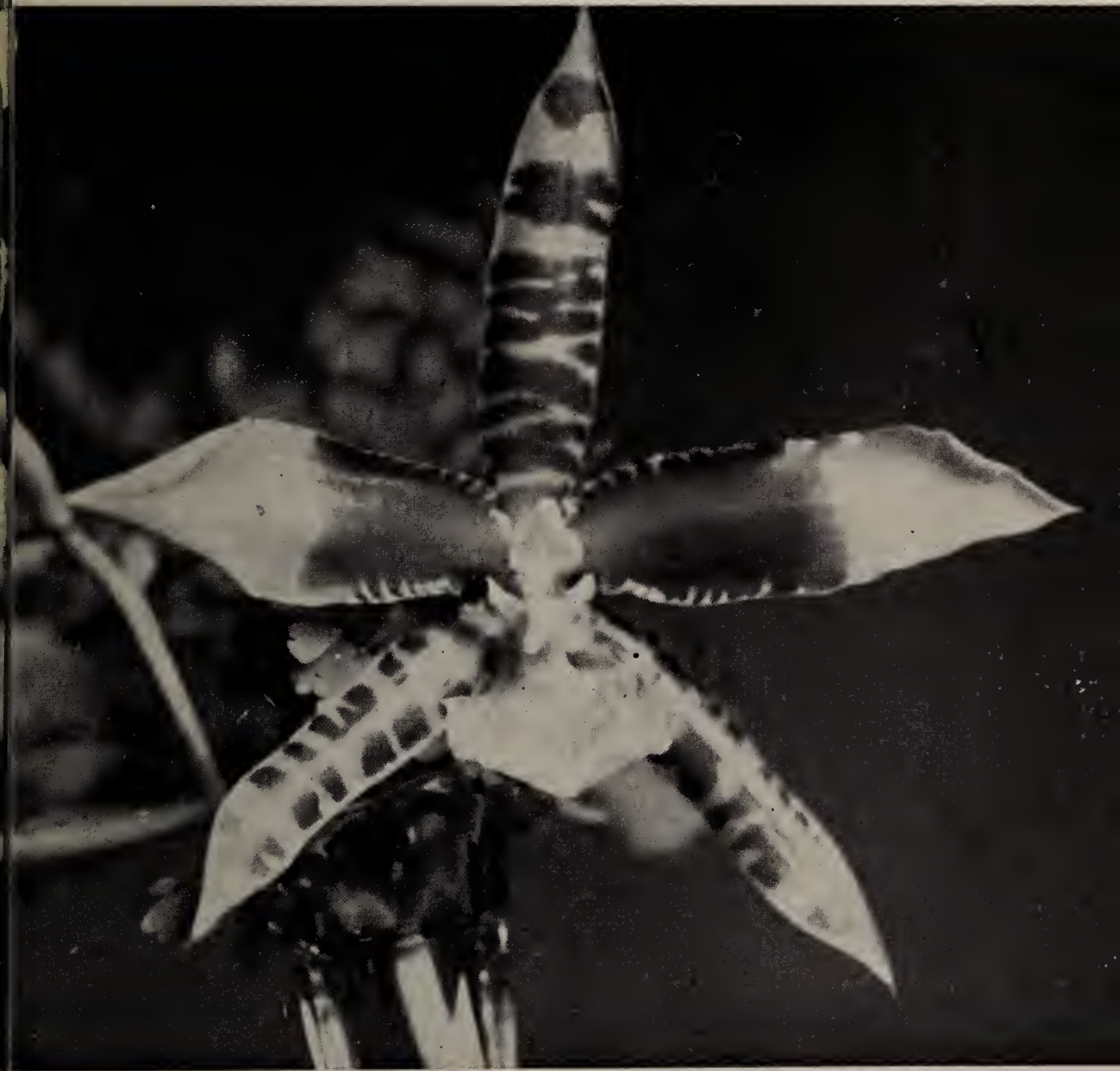
I also saw several people putting on fertilizer today. I know that if lawns were planted in good soil they would not have to have fertilizer every year but few lawns are in good soil so I believe that I will get my lawn fertilizer on now so that it can leach in when the late spring rains (and snows) come. I'll use an organic fertilizer and hold off on the chemicals until the lawn needs a quick shot-in-the-arm.

South of the house, I saw a few honeysuckle buds showing green. Of course the honeysuckles usually get frozen back at least once but that reminds me that I must arrange for any dormant spraying now before the leaves come out. I'll look over my Dogwood, Cotoneaster, Lilac, Elm and Ash trees for scale insects.



The Green Thumb

MARCH, 1948



A Bulletin of the COLORADO FORESTRY AND HORTICULTURE ASSOCIATION

Organized in 1884 - - Denver, Colorado

PROGRAMS AT HORTICULTURE HOUSE

Friday Evenings in March, 1948

- Mar. 5 Some Denver Gardens, illustrated with colored slides by Edward W. Milligan.
- Mar. 11 Denver Rose Society. All persons interested in roses are invited to attend.
- Mar. 12 Present Day Landscaping Trends, by Charles W. Andrews, Mgr. of the Omaha Office of Marshall Nurseries.
- Mar. 19 The Care of House Plants, by Beanda Conway.
- Mar. 26 The Forests of New Hampshire, by Charlotte A. Barbour.

HELP, HELP

We must have hundreds of members who have experiences with plants that would be worthwhile to pass on to others. As a starter suppose you write your ideas and experiences on the following subjects and send them in to us. We will publish some of the more suitable of these. As a little incentive we will reward the writer of each item which is published a year's membership in the Association.

These are the subjects that we will take for this month:

- "The Street Tree That I Like Best."
- "Two Good Rock Garden Plants."
- "My Favorite Combination of Perennials."
- "A Good Plant for Espalier Use in Colorado."
- "A Native Wildflower Suitable for Cultivation."

Keep your story between 100 and 300 words if possible.

Front Cover—Odontoglossum grande. Sepals and petals chestnut, red and yellow; lip white blotched with red-brown

ORCHIDS TO HELEN FOWLER

It was announced at the annual dinner of the Colorado Forestry and Horticulture Association that the library at Horticulture House has been named The Helen Fowler Library to honor Mrs. Fowler through whose generosity and vision the library has been made possible. Mrs. Fowler's own collection of about 500 volumes was the nucleus of our library. In addition to giving these books, she has given and raised several thousand dollars to increase the size of the library.

Her knowledge of horticultural literature and her untiring efforts in seeking rare books have brought together a remarkable collection in a very short time. Her enthusiasm is an inspiration to those who work with her. We who use and enjoy the library owe her a continuous debt of gratitude and we look forward to her welcome visits and the further additions of interesting books she invariably brings.

SCOUTING TRIP

The first outdoor trip of the season has been announced by the Outdoor Programs committee. The date is March 14, and the time is 9 A.M. at Horticulture House. The trip will be to the site of a proposed new botanical area below the Stapleton Drive. This area also contains several miles of the old Beaver Brook Trail, which it is proposed to renew. Rocks, timber, streams, parks and steep slopes make this area an ideal place for a botanical reserve. Some early wildflowers may be out at this time. Come dressed for anything. Bring lunch and a can of soup to contribute to the community pot. Register and arrange for transportation at Horticulture House as early as possible.

OUR ADVERTISERS.

The fine cooperation being given by the commercial horticulturists of the state is enabling us to print this magazine every month. If it were not for the income from the advertising your membership would have to be twice what it is to cover the cost.

We believe that we are rendering a service to the gardeners of the state by printing these announcements of nursery, landscape and seed firms. By a reference to our advertising pages you may find "where to buy it." We believe that the firms here represented are reliable and worthy of your support, but inclusion here does not represent a guarantee by us.

We also believe that we are giving good value to these advertisers, as this magazine reaches most of the garden minded people of the state. We, and our advertisers, would appre-

ciate it if readers would call attention to the fact that they "saw it in the Green Thumb."

MORE HELP NEEDED

The editor of a magazine like this must be a pretty good guesser to figure out what the membership wants! The tendency is to give the readers the things that he likes and to hope that they like them, too. We want to make the Green Thumb fill the need for horticultural information adapted to our Rocky Mountain climate. It would help us greatly to do this if each reader would let us know the particular things that they like about the magazine and give suggestions for improvements which would make it more valuable to them. Look over other horticultural magazines published elsewhere and let us know what features you think we might adapt to our use. Thanks.



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HORTICULTURE IN THE
GRAND VALLEY

Grand Junction and the surrounding towns enjoy conditions which are favorable for the development of horticulture to a higher degree than anywhere else in the state. So far as the commercial side is concerned the residents of this valley have realized their advantages and have taken a leading role in the improvement of cultural methods of such things as peaches and alfalfa. The annual meeting of their Western Colorado Horticulture Society this last January was attended by over a thousand people, and they had brought in the best horticultural experts to give them the latest information on every phase of their work.

They have been so busy making a living that they have rather neglected their wonderful possibilities in the way of ornamental horticulture. True, they do have some problems of alkaline soils and scarcity of water; but in spite of this there are many people over the valley who have demonstrated that a great variety of beautiful trees, shrubs and flowers can be grown there.

Now that the living is assured, we hope that they will begin to pay a little more attention to making their community beautiful and livable so that they and their children and their many visitors may be proud of it. It might easily be made into one of the most attractive communities in the state.

The Green Thumb

A Bulletin of the
COLORADO FORESTRY AND HORTICULTURE
ASSOCIATION

Organized in 1884

GEORGE W. KELLY, Editor
MISS ALICE WOOD, Assistant Librarian
MRS. C. A. BARBOUR

Editorial & Advertising Asst.
L. C. SHOEMAKER, Treasurer and Custodian
MRS. STELLA D. HARE, Membership Secretary

1355 Bannock St., Denver 4, Colorado

Phone TAbor 3410

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Published Monthly.

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Vol 5 March, 1948 No. 2

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THE WEEK-END GARDENER

THERE are signs of spring all around this afternoon. The snow is almost gone from the south side of the houses and the air begins to feel warm. I'll look around a little before I go in. Aha, there is the tip of a tulip breaking through the soil south of the house. I must get all that trash out of the way so it, and others, may come along unrestricted. I expect that there are some crocus coming through in several places too. I'll come out after lunch and really clean the garden up.

The Oldtimer was by just as I started my big cleanup and warned me that there might be more winter, so that spoils my big job for the afternoon.

There are several bare places under the trees and around the edges of the garden where the frost is almost out. I believe that I will clean them up and seed in some of the hardy self-seeding annuals. Larkspur, Calendula, Sweet Alyssum, Cosmos, Marigold, Bachelor's Button and Portulaca would probably like to be scattered around now. I can then forget them until warm weather. I might try some of those seeds that I saved from the wildflowers in the hills last summer. Some of them might like it here if I did not coddle them too much.

That reminds me that there are likely to be some wildflowers in bloom in protected places in the hills—on the south slopes of the hogback and foothills. I'll take the family into the hills tomorrow and we will hunt around for those first hardy blooms.—The yellow clusters of the Oregon grape flowers, the purple of the Stork's bill, the yellow of the Bladder pod, and possibly some Pepper-and-salt parsley or even a Spring beauty. Let the snows and cold come. We know that when we see these early things in bloom that spring can't be far away. To see these first things is more thrilling than the sight of all the hills covered with brilliant bloom later in the season.



KNOWING PLANTS vs. KNOWING THEIR NAMES ONLY

By GRACE GIBSON FREEMAN

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There seems to be a tendency among both professional and amateur botanists to be satisfied with knowing just enough about a plant to be able to give it a botanical or common name. More satisfaction, it seems to me, is to be gained by knowing the plant first and the name afterward.

There are so many spectacular things to be learned about plants that I often wonder why botanists waste their time counting hairs on a leaf surface in an attempt to make it a

sufficient difference for the basis of a new species. That habitat is an important item concerning plants is understood by most plant collectors; very few, however, go much further in their search for plant knowledge. There are often interesting things to be learned about the life histories of plants if one will only keep watching throughout the year. Flowering stages of plants are usually not neglected but fruiting stages frequently are overlooked. Often the adaptation of a plant for growing under unusual conditions is of great significance. This may cause the development of special tissues or organs. Numerous other things not so obvious need close observation and study.

PUNCH-HOLE METHOD



Each species of plant is characterized by certain, morphological features which distinguishes it from other species. Likewise there are differences between species in their physiological functions and growth habits; hence in their **NUTRITIONAL REQUIREMENTS**. In some these differences are highly distinctive and generally well known while in others they are so slight as to be almost indistinguishable even to the trained physiologist.

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MAINTENANCE OF STREET TREES

THIS is the fourth and last of our series of articles dealing with street trees for Colorado. This discussion of maintenance problems will be divided into several sections, each written by an expert in that line.

In addition to the knowledge of trimming, spraying, fertilizing and combatting insects and diseases, careful thought should be given to proper watering and in some cases cultivation. Cultivation is, of course, only needed when the parking strip in which the trees are planted is not in lawn. Then it is needed to keep down weeds and to prevent the surface of the soil becoming so hard that it would prevent the necessary entrance of water and air. When the ground around street trees is planted in lawn, care should be taken that the grade is low enough to allow for some natural filling-in over the years and still keep a surface low enough so that it can be watered without loss through run-off.

Systematic watering is probably the most important consideration in the maintenance of healthy, vigorous trees. In many cases the soil available for the root run of street trees is restricted by pavement and sidewalks, so that it is doubly important that the remaining soil be kept sufficiently moist at all times. Just filling a bowl around the trunk of the tree is not enough; the soil should be wet out where the feed roots are. The device of a tile or pipe inserted in the ground

beside the tree will let a little water down but usually does more harm than good, as it gives a false feeling of doing the right thing but actually does not allow the water to soak out as far as it should. A slow stream or spray of water directed to run over the whole spread of the tree for a sufficient time for it to soak well down is the only way to be sure that the tree is properly taken care of. Three or four such good waterings a year are of more value than a light sprinkling over the surface every other day.

A word of caution should be given against over-watering. Some trees, especially American elm, the first year, cannot tolerate a soggy soil around their roots. The only way to be certain that a tree is receiving the *proper* amount of water is to dig down and examine the soil occasionally.

FERTILIZATION

By GILBERT A. PIKE

Fertilization of trees growing under street conditions is of vital importance. Fertilization will aid the trees greatly in resisting the ravages of insects and fungus diseases to which they are constantly exposed. Street trees have a decided disadvantage over those growing in their natural environment as they must fight a constant struggle for their very existence. Sidewalks, pavements and closely growing hedges are some of the handicaps that must be overcome in order



that they may live. Under these conditions it is utterly impossible for a tree to get one-half of the necessary moisture and minerals required. A healthy tree is beautiful if not marred by storm or human hands. To balance nature and compensate for the loss of minerals we must use artificial means by fertilization with chemicals that are balanced to give that particular tree or trees the proper diet.

The National Park Service has for many years used and recommended the punch hole system of fertilization. This is a simple operation and can be accomplished quite easily with the aid of a good iron bar. Drill holes 14 to 18 inches deep and 2 feet apart, between the curb and on both sides of the sidewalk, starting 6 feet from the tree. On trees having a trunk diameter of 6 inches or more work outward with your circles slightly past the branch tips. Fill the holes to within one or two inches of the surface and then water. This should be done now and every few months until the middle of the following summer. You will be thoroughly pleased at the quick and healthy response which will

be noticeable in a few weeks: *Caution:* Do not fertilize from August through October as you may overstimulate wood development. Trees fertilized at this period do not have time to consolidate the stimulated cell structure caused by fertilization. Winter kill usually follows the early fall feeding of trees and shrubs.

If you have not had a soil analysis it would be a good investment as you would be advised as to the quantity and type of fertilizer best suited for the trees' requirement.

Trees are like people. To withstand the constant exposure to disease they must have proper nourishment to give them the energy to resist. Do it now and do it right!

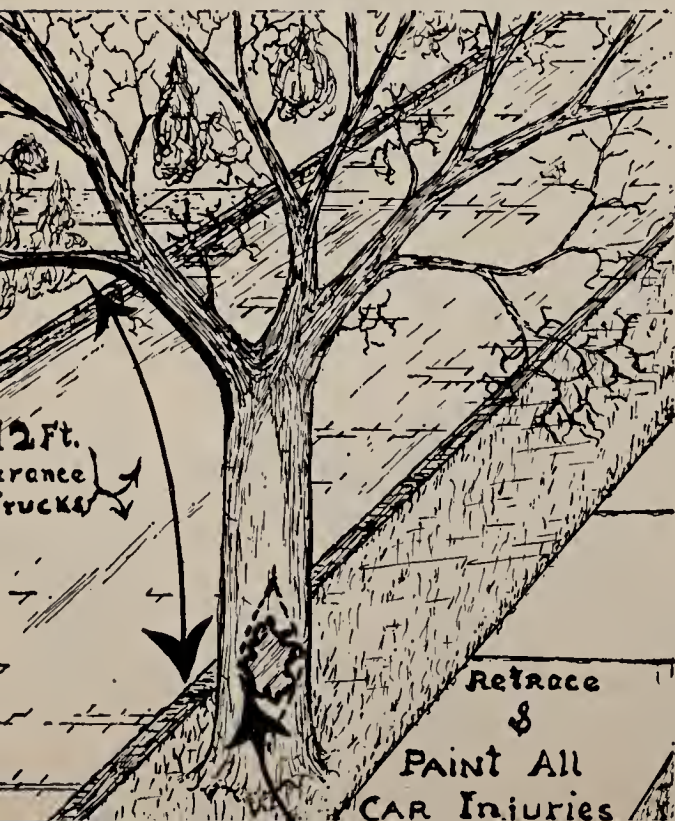
TRIMMING

By JOHN W. SWINGLE

Shade trees are highly valuable property; thus their maintenance has taken on a new significance. Proper pruning is essential. Remove the dead branches and as few of the live limbs as possible. Make every effort to preserve their natural beauty.

Wounds to which trees are constantly subjected are the cause of much of their ill health. In vigorously growing trees most of the tiny wounds heal quickly without leading to any important damage. However, in each open wound lies potential disfigurement, impaired health or untimely death. In many cases the ultimate harmful results that follow such injuries can be prevented by prompt treatment after wounding occurs.

Remember that trees living under street conditions are growing under decided handicaps, i.e., they do not get proper nourishment, they are constantly menaced by cars and other vehicle injury and, in some instances, they must be severely pruned to prevent electric and telephone line interference.



Give the following suggestions serious consideration. They will be very helpful and will aid greatly in the healthful maintenance of your trees.

1. Plant varieties suitable to the climate in which you live.
2. Fertilize, water and spray as suggested in this and previous articles.
3. Prune them carefully when necessary, making neat flush cuts and by cauterization and waterproofing of the wounds prevent infection.
4. Be alert in the event of vehicle damage to the trunk or lower branches. Call a reputable tree expert promptly to render proper treatment.
5. Make sure that you have at least 12 feet road clearance from the lower branches.

Follow the above suggestions carefully so that you enjoy the beauty and comfort of your trees in the many years to come. They are your responsibility. Indifference and neglect on your part may not only cause a loss of your tree or trees, but menace the whole community as well. Too numerous examples can be cited where neglect has put the whole community to unnecessary expense. Since the discovery of the *Scolytus* beetle here in Denver, we must be doubly alert as they are virus carrying insects of several diseases, including the Dutch Elm disease (*ceratostomella*), *Verticillium* and the serious *Cephalosporium* wilt which our research has brought to light in the past few weeks.

Periodic examinations by qualified tree experts is most essential if Denver is to maintain its reputation as a city of beautiful trees.

INSECT ENEMIES

By PAUL N. MORROW

In order to keep street trees healthy, vigorous and beautiful, some consid-

eration must be given to the control of insects. The listing of these insects that are common in the Rocky Mountain area must of necessity be brief in this article.

The ash is comparatively free of insects, but has one very dangerous enemy, the Oyster Shell Scale. Due to its ability for rapid reproduction, it can reduce the vitality of a shrub or tree very fast. The Oyster Shell Scale has a number of natural enemies but these are not dependable for control measures. Dormant spraying with lime sulphur or miscible oil for 2 or 3 years in succession will give excellent control. This scale also infests lilacs, poplar, willow and silver maples.

Our beautiful white birches are very much affected by aphids, and by another, much more serious pest, the Bronze Birch Borer. The beetle stage is olive bronze in color, slender and about one-half inch long. The larva is a slender, white, flat grub, three-fourths inch long. It attacks all parts of the tree above the ground. Usually by the time the symptoms of the insects become evident, the tree is in serious trouble and it may be impossible to save it. The beetle emerges from the bark through small semi-circular holes during late May or early June. After emerging they lay white eggs in the crevices of the bark. A spray applied at this time will give some measure of control. This spray must have residual contact and ovicidal values, such as 2 percent miscible oil with D.D.T. It must be applied at the time the beetles are emerging and laying their eggs in the bark crevices. This operation should be repeated for 2 or 3 years to obtain any great measure of control. The birch borers, as with most other borers, usually attack trees weakened from other causes. The best preventive is to keep trees vigorous by proper

feeding and watering. This applies to control of all insects on all trees.

Our elms have quite a number of insect enemies. The outstanding one at the present time, causing widespread damage throughout the Rocky Mountain region, is the European Elm Scale. This insect can best be controlled by dormant spraying as with the oyster shell scale. It differs from the oyster shell scale in one way; it goes through the winter as a live insect and not in the egg stage.

Another insect enemy of the American elm has recently invaded the Rocky Mountain area, the "Elm Bark Beetle" (*Scolytus Multistriatus*). This insect has been causing widespread damage in the Eastern states for some time, but was only discovered in Denver during the fall of 1947. The first appearance of this insect may go entirely unnoticed; especially in a tree with lowered vitality. A more vigorous tree with considerable sap flow, will start oozing from the small "shot-like" holes (made by the adult beetle when entering or emerging from the tree). This sap becomes sour, attracts wasps, bees and can be smelled when near a tree. The insect attacks by boring small holes through the bark into the sapwood where each female creates a brood chamber, depositing up to 140 eggs along the sides of this gallery. On hatching, the young grubs leave the brood chambers at right angles either to left or right, thus creating a characteristic burrow.

The beetles appear around the first of May and feed sparingly on the buds and leaves and even the bark in the small crotches before entering another tree. It is during this feeding period that the beetle may inoculate trees with the causative organisms of the Dutch Elm disease.

The best preventive method is to keep trees vigorous by proper feeding

and watering; a residual contact spray applied at the time of emerging should give some measure of control. The first brood should appear in May and the second brood sometime in August.

The Cottony Maple Scale, while not as persistent as Elm Scale, is a very destructive enemy to a great number of our ornamental trees and shrubs; including maple, elm, honey locust, willow and horse chestnut. The young adult females, dark brown, one-sixteenth inch in length, roundish or oval in outline survive the winter in an inactive stage, attached to the under side of the smaller limbs and twigs, covering themselves with a secretion resembling lacquer. Some survive the winter as newly hatched nymphs, staying in the nests which look somewhat like popcorn. The control of this insect is the same as that of the oyster shell and elm scale.

Aphids are a pest that are quite numerous on nearly all plants and trees and the damage they are causing is being taken too lightly. They multiply very rapidly and can become a serious threat to a tree in a very short time. Very good control can be obtained with nicotine sulphate and pyrethrum sprays.

The experienced spray man may be able to control a number of insect pests with one and the same spray by proper timing. The quality of the material and thoroughness of application is always a paramount factor in the control of any insect.



SPRAY EQUIPMENT AND CHEMICALS

By CHAS. H. BEHSE

There are any number of hand sprayers on the market which are capable of doing a satisfactory job on plants, shrubs and small trees. In

most cases the use of a powdered insecticide applied with a hand duster will be found to give equally as good results as insecticides mixed with water and applied with a sprayer. Powdered insecticides can be purchased ready to use, hence do away with the need of measuring, mixing with water and generally keeping agitated while in use. Either plunger or bellows type dusters will be found satisfactory.

When the spraying of moderate to large trees becomes necessary it is advisable to call on the services of a professional sprayer equipped with high pressure equipment. Medium to large shade trees require ten to thirty gallons of spray material each for adequate coverage while tall trees require a sprayer capable of throwing a spray stream fifty or more feet. Large estates, park departments and institutions with a considerable number of trees may find the sizable investment necessary in a power sprayer worth while. It should be borne in mind, however, that a considerable volume of spraying will be necessary to pay for the original cost, depreciation, repairs and replacement of such items as spray hose and other rubber parts which deteriorate rapidly when oil sprays are being used.

Whether a liquid spray or dust is used, in whatever make of sprayer or duster, satisfactory results cannot be expected unless thorough coverage is obtained. This means that every part of the plant must be covered with dust

or spray, underside as well as tops of leaves and stems and application must be made from two or more directions.

Spray materials used for insect control generally are classed as either stomach poisons (i.e., must be eaten by the insect to cause death) or contact poisons which, as the name implies, kill upon contacting the body of the insect. Stomach poisons are of value only for foliage eating insects such as certain worms and beetles. In this class of chemicals will be found many of the old but still reliable insecticides such as arsenate of lead, paris green, etc. Contact chemicals include many familiar names: nicotine sulphate, lime sulphur, dusting sulphur, pyrethrum, rotenone, miscible oils as well as a host of newer insecticides such as DDT, Chlordane, benzene hexachloride and many others.

Volumes could be, and have been written on insecticides, their proper application, correct dilution, value for various insects and so on. It should suffice to say here that only materials should be used which are known to be satisfactory or which are recommended by authorities on the subject of spraying. Products of a reliable manufacturer should be chosen and his directions followed implicitly. Further, no insecticide will do a satisfactory job unless properly applied. This simply means that contact sprays must actually contact all the insects and stomach poisons must coat all the foliage.



MY ORCHID ORPHANAGE

BY RUTH PORTER WARING

"IF THE orchid bug bites you, you never recover." This was said to me by a distinguished retired judge in North Carolina who had begun to raise orchids as a pastime but eventually became one of the largest commercial growers in the United States. My infection by the virus was, however, almost accidental and the origin of my orchid house was the result of trying to utilize something already on the premises.

Some years ago my doctor husband had built in our back yard a small glass house 6 x 9 feet which he used in his research on hay fever plants. This experiment was successfully concluded in two seasons—the project finished. There stood the little glass house, and the question was, what to do with it?

For one winter it served to shelter a flock of chickens, but neither we nor the chickens enjoyed it! The following year I was persuaded to try raising various hardy species of plants, such as English violets, violas, etc., in earth warmed by an electric cable placed in the benches under the soil. The sun furnished the only other means of heat. Several periods of bitter cold and dark days proved that this arrangement was not practical. I then consulted the Public Service Company, who installed a small gas boiler in the basement of our home from which pipes were run underground to hot water radiators in the greenhouse.*

Then I set about raising a variety of perennials and annuals, and probably would be doing so to this day had not my sister presented me with two orchid plants to celebrate the arrival of real heat! That was the be-

ginning, and I found myself taking more interest in these two little cypripediums than in the rest of the inhabitants of the greenhouse.

The experience of growing plants successfully for two years in the small well-heated house fired me with the ambition to do something bigger and better, so I queried an architect and contractor as to whether a larger greenhouse could be built that might be heated by the same furnace. It could be. A blueprint of specifications was sent to Lord & Burnham in Des Plaines, Illinois, who responded with my present pre-fabricated greenhouse, 12 x 18 feet. It contains side benches, a center bench, and a utility unit at one end comprising sink, bins, cupboard, open shelves, and a workbench. Since some of the plants hang in baskets and some against the wall on boards, the maximum capacity is about 250 plants.

When the new house was finished I started to make purchases of orchid plants and others were given me. The quest for them led me as far as California on the west coast, where I visited the magnificent "Palace of Orchids" of Armacost & Royston (who employ 25 to 30 women to do nothing but pot seedlings) and to Baltimore on the Atlantic. A firm in Baltimore directed me to the orchid houses of Judge Way, in Southern Pines, North Carolina. Under his kindly tutelage I learned the methods and the fascination of orchid culture. He took me with him on his rounds of the houses and the potting sheds where he showed me by actual demonstration how to pot, to water, to pick, and to care for the orchids, both terrestrial and epiphytic plants, at all

*On account of fumes it is wiser not to have a gas heater inside a small greenhouse.

stages of their lives. Always, thereafter, when he sent me shipments of plants, he would write out painstakingly in long-hand specific instructions for the care of each individual plant. He knew that I was an ardent convert.

In the ten years since the new house was built, the collection has grown in such varied ways that I have named it the "Orchid Orphanage". Some plants were purchased from various growers in this country, and others from Mexico, Guatemala, and Panama were given to me. Many of these latter are still unnamed, as the war interrupted my attempts to identify them. More came from my sister's home in California after her death. The climax was reached one day in 1940 when I fell heir to over 100 plants from the dismantled Fern House in City Park.

The crowding in my greenhouse soon became a problem, and I was forced to eliminate the violets, chrysanthemums, and carnations to make room for the fast-increasing collection of orchids, which now includes many different varieties of 14 or more species. As you can imagine, the blooms of this collection vary greatly in shape, color, and size; some have a very delicate fragrance. In color they range from white through the yellows to orange and deep brown; from light lavender through the mauves to dark purple and maroon. They are all fascinating, and one who spends time caring for them feels well repaid when greeted by one of these glorious flowers, especially on a cold, snowy winter morning.

CARE OF ORCHIDS

The fundamentals of good orchid culture are proper and accurate controls of temperature and humidity plus a good airing of the house once every 24 hours. A temperature of at least 58 to 60 degrees should be maintained at all times, so the ventilation



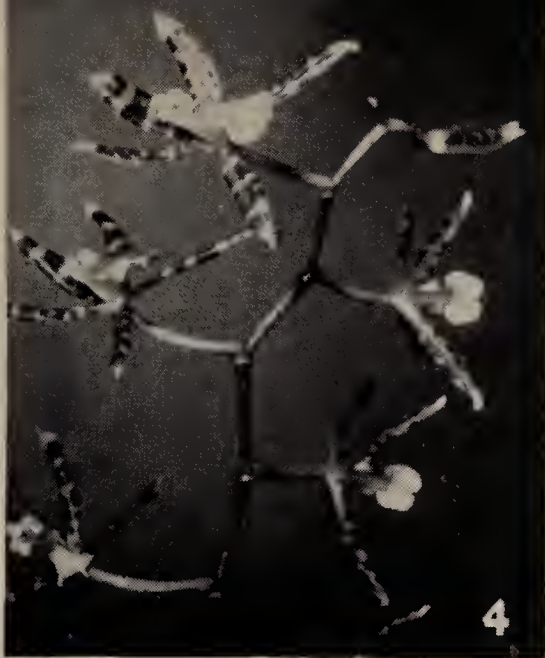
Cypripedium insigne in pots on wire racks.
Coelogyne cristata in hanging basket.

must be carefully handled in cold weather. Remember that in their native haunts many orchids grow high on trees. They do not want to be stifled in civilization. By careful study of the different varieties one soon learns the best location in the house for each plant.

WATERING. The ideal way to determine the need for water is to feel each plant and judge how thirsty it is, by the texture of the leaves and state of the potting material. The hanging ones require more drinks than those in the bench pots. Some epiphytes have root systems which produce pseudo-bulbs above the potting medium. If these bulbs are firm



1. *Dendrobium dearii*—flowers pure white, Philippine Islands
2. *Stanhopea tigrina*—flowers creamy yellow dotted with brown
3. *Cattleya Susan Hye alba*—flowers white with yellow throat
4. *Odontoglossum*—sepals and petals yellow with brown stripes
5. *Cypripedium maudiae*—sepals and petals green and white
6. *Laelia praestans*—flowers pale lavender, lip reddish purple
7. *Cypripedium auroreum*—flowers light yellow, dorsal sepal white
8. *Epidendrum cochleatum*—sepals and petals pale yellowish
9. *Cattleya Bowringiana*—flowers light rose purple, lip dark
10. *Oncidium ornithorhynchum*—flowers fragrant, rose lilac, lobes
11. *Cymbidium*—flowers pale yellow, crimson border on lip, fragrant
12. *Oncidium Caveudishianum*—flowers yellow with slight green



ple, Mexico

merica

ite, throat purple, Guatemala

lip pale yellow green, foliage mottled.

o, India

o purplish black, Tropical America

nt lobe, throat light, Brazil

larker, crest yellow, Mexico and Guatemala

, lip bright yellow, Mexico



and full, the plant has enough water; if wrinkled, it should be given more. In this dry climate of Colorado the whole interior of the house, roof, walls, and floor, have to be wet down two or three times a day in the heat of summer. During cloudy weather less moisture is needed. A shading compound is a *must* in summer for the roof glass, but little shading, if any, is needed through the winter months.

POTTING. The cycle begins with potting. Terrestrial orchids are potted in a mixture of leafmold, soil, and sphagnum moss, the potter being careful to have the crown of the plant at the soil level. Pieces of broken pot are placed in the bottom, which must have a good sized hole for adequate drainage and air circulation. (It is possible to buy special orchid pots.) The epiphytes are potted in osmun-

dine moss, which should be broken up and shredded. It is wise to examine this moss carefully before using to detect any trace of mildew which may cause a fungus disease. The moss should be packed very tightly around the roots and a sprinkling of granular charcoal should be added to all pots as a purifying agent.

As a rule re-potting should be done every two or three years after the plant has bloomed and new growth started. When re-potting, keep all plants in as small pots as possible. In dividing cattleyas, leave at least three bulbs on the front end; if the back bulb or bulbs have a good eye, pot them up separately. Oncidiums do not divide readily but back, leafless bulbs of cymbidiums, in very small pots with plenty of moisture, are apt to start new growth.

Wire racks should be used to hold the pots four or five inches above the surface of the bench. In the absence of water pans in which to set the racks, there should be placed, beneath and between the pots, small chunks of coke which provide means for retaining and evaporating moisture. A celluloid label showing the name of the plant, its date of blooming and its date of repotting should be placed in each pot.

SPRAYING. Since orchids are not prey to as many insect pests as are their more commonplace fellow-flow-ers, one spraying a week with insecticide should be sufficient. This freedom from insects is one of the things which endears orchids to their growers. Blights and fungus diseases, however, may play havoc in the greenhouse. I use a solution of Wilson's OK and Black Leaf 40 in the following formula:

Large Quantity		Small Quantity
1 qt.	Wilson's OK	2 1/3 ozs.
1/2 oz.	Black Leaf 40	17 drops
3 1/2 gal.	Water	1 qt.

Laeliacattleya Clea—Flower cream color. Fringed. Lip with greenish-yellow tinge at base and lavender at crest.



BLOOMING. The majority of orchids bloom once a year and then they have a resting period until new growth starts, during which time they should be kept damp, but not watered as much as in the growing season. The blossoms should always be cut when perfection is reached, and you will have better results with your corsage if the flower is kept in a cool place over night before being worn.

Obviously orchids, like children and husbands require steady care, love and attention. For the person who wishes to raise orchids as a hobby, I feel that natural species are far more interesting than the glamorous and exotic hybrids.

Although in large establishments the many varieties of orchids are separated into houses of different temperature and humidity, here is a list of the species that I have grown successfully in my one-room Orchid Orphanage:

Cattleya	Epidendrum
Brasso-cattleya	Laelia
Cattleya-	Laelia-cattleya
Bowringiana	Miltonia
Coelogyne	Odontoglossum
Cymbidium	Oncidium
Syriopedium	Stanhopea
Dendrobium	Tricopina

Because of the pleasure and gratification I have had from this fascinating hobby, I hope this informal story may inspire others to venture in the same field.

The following books are both interesting and helpful:

- Briscoe, T. W., *Orchids for Amateurs*, W. H. and L. Collingridge, Ltd., London, 2nd edition.
 Curtis, C. H., *Orchids for Everyone*, E. P. Dutton & Co. MCMX.
 Linden, Lucien, and Rodigas, Emile, *Iconographie*, Gand, 1889; *Des Orchidees*, Vanderhaeghen, 5me volume.
 MacDonald, Norman, *The Orchid*

Hunters, Farrar & Rinehart, 1939.
 Niles, Grace Greylock, *Bog-Trotting for Orchids*, G. P. Putnam's Sons, 1904.

Sander, H. F. C., *Sanders' Orchid Guide*, Printed in Belgium, 1927.

Schulze, Max, *Die Orchidaceen, Deutschlands, Gera - Untermhaus*, 1894.

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White, Edward A., *American Orchid Culture*, A. T. DeLaMare Co., New York, 1939.



JACK HARENBERG SEZ

Some of us who tried to get a new lawn established late last fall found that our cold weather crept in sooner than we anticipated, and that only a small per cent of that seed germinated and is showing a little green; this is not serious if on dry warm days you have watered and kept this ground from drying out. In late March, when you figure it might be about the last snow, sow some seed over these thin, bare places (on top of the snow). This eliminates a lot of scratching in, and gives an opportunity for the seed to germinate early.

Too many of us fertilize too early in the season. Our winter winds and heavy thaws carry away a good part of the fertilizer. We feel that fertilizing in late March or early April is an ideal time, for the plant life then can take this food up, on account of the slow seepage at this time.

You who are looking for table decoration at this time of year, will find that your Red Dogwood twigs, Yellow Dogwood, Pussywillows, and Japanese Barberry will make very interesting arrangements.

THE WEEK-END GARDENER

I'M really anxious to get on my old clothes and go to work in the garden today. Except on the north side of the garage, the frost is out, and the ground is inviting me to dig in it. There is something about turning over the soil in the spring that hits me deep inside. Maybe its a throwback to my early ancestors, but the smell and feel of freshly worked soil makes me feel good. I feel like a partner of Nature.

I'll spade under some of that manure and compost in my vegetable and cut-flower garden. The soil can then lay rough, and mellow with the freezing and thawing and rains that are sure to come before it is really warm enough to plant the tender things.

While I am at it I'll make a place^{11.54} to plant the sweet peas. I can't see that it makes any difference whether I plant them on St. Patrick's Day or a week later, but that old story reminds me that they should be in early. The old custom of digging a deep trench and backfilling with rich soil is not superstition for I have seen it produce some wonderful sweet pea blooms. There, that's a good job done, and I'll just about have time to dig up a few rows to plant some of the smooth edible kind of peas. It's funny how the smooth kinds like Alaska like to be in early while the wrinkled kinds will not come up unless they are planted when the soil is warm. Good fresh peas are one garden vegetable that we can't get too much of. If we raise more than we can eat fresh we can freeze or can them.

I'm going to take a chance on planting a few gladiolus bulbs now. If they are planted quite deep they will never be hit by any frost that will still come this year, and they can form lots of roots ready to grow in a hurry when the weather is really warm.

The oldtimer says that a few things like Bleeding hearts, Rhubarb, Asparagus and Peonies should be moved very early before they start to send up sprouts. If I can find some nursery or seed store that has them for sale now I will plant what I want while they are thoroughly dormant.



"The further men get, I think, from pines the worse for them. Life, if we had never left them, might be plain and hard, and men would not stop fighting or even murdering because they lived in such a place as this—history dispells any such illusion. They might suffer bodily pain and know great weariness. But they would not toss with insomnia, or doubt till they could no longer act. Men to match these trees might raise the devil but they would never for one moment believe in the sicklier saints. You could hardly be small here. You might, sometimes, have a noble thought."

DONALD CULROSS PEATTIE
in "Flowering Earth."

To protect the Earth . . . is the fundamental conservation. Not all citizens can participate here, but every citizen can be mindful of the necessity of it and aid in creating public sentiment. I wait for the coming together of new organizations and societies that shall have for their purpose the conservation of fertility. These will be much more than agricultural and rural organizations and their work need not be technical or occupational. They may include all persons, and the discussions and interest may run the range of men's relation to land . . .

LIBERTY HYDE BAILEY

Reprinted by Permission from *The Land*

This is one of the best summaries yet written on a very interesting but controversial subject. We recommend that our readers study it.—Ed.

Composts, Manures and Inorganic Fertilizers Their Function, Use and Effects on Soils and Plants

BY WALTER THOMAS

Reprinted by Permission from the Journal of the New York Botanical Garden.

IN recent years considerable propaganda against inorganic fertilizers has been spread by certain schools who claim to have established that the use of such chemicals "poison" the soil, destroy humus, cause soil erosion, injure the quality of crops, and lower the ability of plants to resist disease, and that animals and human beings consuming products grown on soils receiving such dressings are particularly susceptible to many diseases. All this is very exciting.

The schools that hold these views originated in Europe, and are known by such names as "bio-dynamic", "organic" and "compost" farming and gardening. We shall refer to them collectively as the "humus school." Their faith is firmly rooted in the beneficence of Nature. Consequently, whatever is "natural" is right; chemical fertilizers being "artificial" are, therefore, wrong.

Although their sincerity is not questioned, the humus school is skillful in pointing out experiments that appear to fit their views and in ignoring the evidence unfavorable to them. Nevertheless, in popularizing the value of sound agricultural practices such as the addition of valuable plant and animal residues to soil as compost, the humus school has rendered good service; simultaneously, they have not only confused the issues, but have misled the non-scientist by exaggerations and unsound generalizations.

One of the humus schools claims that certain secret preparations of

theirs can hasten the decomposition of compost heaps and control fermentation. It is known that the conditions for decomposition in the compost heap are similar to those in soils; namely, aeration, moisture, temperature, not too great acidity, and sufficient nutrients—fats, carbohydrates, proteins and inorganic salts—each in suitable proportion to the others. The various schemes of composting are related to obtaining the optimum conditions with respect to these factors.

Organic and Chemical Fertilizers Supplement Each Other

The deduction from the facts thus far presented is that organic manures and chemical fertilizers both have their uses; one supplements the other. Composts contain not only humus but some supplies of the fertility elements as well. In this sense they overlap the function of chemical fertilizers which lack the decomposable plant or animal constituents on which some of the most valuable properties of organic matter depend; accordingly, inorganic fertilizers cannot fulfill all of the functions of compost material. But the "chemical" fertilizers have many advantages over organic manures. They can be easily applied at the most suitable time, and their great variety enables a selection of one or more nutrients to improve the balance. Moreover, they are in a readily available and concentrated form. These properties require knowledge and skill for the proper use of them.

On the other hand, composts have the advantage in that their use is safe in inexperienced hands, for they are not too rapid in their action. Against this advantage must be placed the fact that their composition varies considerably with the residue employed, so that the nutrients in them may not always be well balanced. Organic manures, moreover, do not always contain all the essential nutrients, especially those elements required in very minute amounts — manganese, boron, zinc, copper, molybdenum, cobalt, and possibly others. These elements are fairly uniformly distributed in rocks, but in some soils they are known to be either absent or unavailable to the plant. There is some evidence that one of the reasons for this unavailability may result from insufficient decomposing organic matter in soils where the humus maintenance has been neglected. However, where nature has omitted to provide in the rocks and soils sufficient amounts of all the major and trace elements, or if present originally they have been reduced by crops or leaching, applications of composts from material produced on such land will not remedy the deficit. In some fertilizers trace elements are present as impurities and in some regions they are added to the fertilizers.

The inorganic or mineral fertilizers are referred to as "artificial" by the various humus schools. According to them, the only soil amendments that can properly be applied are the "natural" ones, meaning the products resulting from the decomposition of plants with or without the intervention of animals. The term "artificial" was applied when fertilizers were first introduced to distinguish them from farmyard manure. The designation is misleading, inasmuch as some of them are just as much products of nature and, therefore, just as natural as farm-

yard manure—possibly more natural. Examples are the kainits and other potash salts mined from natural deposits in Europe and this country; Chilean saltpeter (nitrate of soda) from mines in South America; rock phosphate from deposits in this country and elsewhere, and finally guano—the excrement of seafowls found mainly in islands off the coast of Peru.

There are castes too among the humus school. Condemning the use of fertilizers that are "chemical", one group, nevertheless, makes use of limestone, but objects to burnt (slaked) lime obtained from it. Some accept basic slag, a product of the steel furnace, and also rock phosphate, but ban superphosphate obtained from the latter, in which the phosphorus is in a more available form.

Effect on Soil Bacteria and Earthworms

With respect to soil bacteria, there is no evidence that fertilizers result in injury. No significant difference in their numbers has been found in field plots without any fertilizers and in those which have been treated with fertilizers continuously over a period of years. The number of bacteria and other organisms can be greatly increased by the addition of organic matter; but there is no virtue in mere numbers for an increase in their numbers during the decomposition of organic matter high in carbohydrates and low in nitrogen may deprive the plant of its nutrients for, as we have seen, the food utilized by both is similar.

Another argument of the humus school against fertilizers is that earthworms won't flourish in soils to which "chemicals" are added. This is only half a truth. The facts are—and there is much experimental work on the subject—that the injurious factor is

soil acidity. It is true that fertilizer plots treated with ammonium sulfate without lime additions contain no earthworm casts, but that casts are more abundant in such plots when limed. Provided, therefore, the soil is not allowed to become too acid, earthworms thrive in plots which have received heavy applications of inorganic fertilizers. Earthworms and other small animals will migrate to soils particularly rich in suitable organic matter, but their numbers are not reduced by the addition of fertilizers even in ordinary soils. There is no doubt that the earthworm's contribution to soil fertility is considerable and possibly the subject should receive more attention by scientists.

Alleged Effect on the Plant: The anti-fertilizer crusaders assert dogmatically that chemical fertilizers increase the susceptibility of plants to insect, fungus, and virus attacks, and that plants grown on composts are free from these attacks. The experiments of orthodox science do not support these claims; rather the experimental facts—and they are considerable—point to their value in reducing many diseases.

Effect on Quality of Crops

The composition of the crop is affected by soil amendments in whatever form they are supplied. The need is for a proper balance between the various nutrients to supply the requirements of the plant as well as the nutritional needs of the animal or human consumer. No sound experimental evidence exists that organic manures have any special value with respect to quality or that well-balanced fertilizers are detrimental. Foods raised under the same conditions on organic manures and on chemical fertilizers have been carefully compared without any nutritional differences being found either with respect to proteins, carbohydrates, fats, mineral salts or vitamins. The problem of quality in foods is obviously complex and the surface of the subject has hardly been scratched.

In review, then, we see that there is room for all methods of balancing the soil losses of the trio—nitrogen, phosphorus and potassium. The sound view is to use organic materials of all kinds for humus and chemical fertilizers for additional nutrients. Extremist viewpoints should be avoided.

WINTER PLANNING FOR THE VEGETABLE GARDEN

FEBRUARY gardening should consist mainly of planning for the actual work that comes later. It will save many valuable minutes, when planting time comes, to have most of the details worked out and plainly down on paper.

In the early spring enthusiasm there is a tendency to plant many things which will not be used. Consult the likes and dislikes of the family and do not plant spinach, for instance, if no one eats it. If everyone likes tomatoes, however, plant plenty of

them. A careful plan now will help to avoid many mistakes.

In the Rocky Mountain area special consideration must be given to the length of time required to mature a crop. In high altitudes it is possible that little more than lettuce, cabbage, peas and spinach will grow, while lower down it may be possible to grow melons and tomatoes.

Almost all gardens resolve themselves into three sections: the early vegetables such as radishes and lettuce; the vegetables for canning such

as tomatoes, beans and beets; the storage vegetables such as cabbage, carrots and turnips. These crops may often be planned so that two different things can be harvested from the same ground in one season.

The mechanical layout of the garden is also important. In an irrigated region the rows should run in a direction providing enough fall for the water to run easily but not enough so that it will wash. If horse cultivation is used the rows should if possible run the long way of the plot. Tall things should not be placed where they will throw too much shade on low things. It is usually convenient to plant the earliest things nearest

the house, so that it is not necessary to walk through soft ground to reach them.

A vegetable garden may be planned that is beautiful as well as useful if thought is given to lines, mass and height. After a plot has been in garden for several years it is well to think of rotation, since soil becomes exhausted if used indefinitely for the same plants.

Food for Roses, Delphiniums and Sweet Peas

$\frac{1}{4}$ Wood ashes

$\frac{1}{4}$ Soot

$\frac{1}{2}$ Bone meal

Helen Fowler

THE WEEK-END GARDENER

I BELIEVE that I can really begin to get into the garden work this afternoon. The frost is almost out and most of the soil dried up so that it will work well. The most important thing needed now is to do some transplanting. The spirea bush under the front window is getting entirely too large. It shuts off the view and light. I need a large shrub to screen the ashpit. I'll just move the spirea around. To dig it with sufficient roots will be a big job and take most of the afternoon. When I get it set in the new place I will take time to give it a thorough trimming—not a GI haircut but a thinning out of the older stems way down to the ground. While I am at it I will dig the holes for the new trees that I have ordered from the nurseryman. Then they can go in promptly when they come.

The rest of the day I will spend in working over the perennial borders. After a few years they seem to go all to iris and fall asters. I'll just dig all these rank growing perennials out, move the things that are left as I had indicated on the plans that I made last fall, then add a few new plants or leave places for them, then fill in with a few divisions from the best iris and asters. I'll have a lot of shasta daisies and goldenrod left over too. I'll take all these surplus plants, which are really good, down to one of the schools in the lower part of town and see if some of the children there will want to take them home. I expect that I should ask the teachers to let me tell the children how to plant and care for them or they will not stand much chance of growing. If the children do not want all of them some might be naturalized in suitable places along the highway.

I must browse around at some of the nurseries and pick out some new varieties of 'Mums and Daylilies. It is remarkable what a variety of kinds and colors have been introduced recently. Even the iris has been improved so much recently that I would hardly recognize some of the newer kinds as being related to the oldfashioned varieties.

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REPORT OF THE ROCKY MOUNTAIN HORTICULTURAL CONFERENCE

HELD AT DENVER, COLORADO
DENVER, COLORADO
FEBRUARY 2ND AND 3RD, 1948

The conference was highly successful, both from the point of view of attendance (more than 250 people registered during the two day session) and from the variety and interest of the papers and informal talks given by the many experts who came from as far away as Michigan, Wyoming and Utah to join our Colorado foresters and horticulturists in giving us the benefit of their experience and research. During the following months The Green Thumb will carry extracts from the various speeches made at the conference. In the meantime here is a summary of the highlights.

Dr. A. C. Hildreth, Supt. Cheyenne Horticultural Field Station, spoke of what is being done and needs to be done in research on growing conditions and plant adaptation for the mountain and plains region. Clinton H. Wasser, Associate Range Conservationist, discussed Climatic Differences in forest and grazing lands in this area. Homer J. Henney, Director Agricultural Experiment Station, Fort Collins, described the agricultural problems that come to them for solution. Plant Panels on Evergreens, Shrubs and Trees, Perennials and Roses were held by local authorities on these subjects.

On Monday evening a buffet supper was given at Horticulture House for the visiting speakers, officers and committee members of the Association, after which a large audience gathered to hear Carl Fenner, Ass't. City Forester of Lansing, Michigan, describe the excellent system of tree care in his city. Fred P. McKown, City Forester, Colorado Springs, told briefly of

the progress being made there along similar lines.

On the morning of the second day the program was devoted to the subject of soil. Charles M. Drage, Extension Horticulturist, Chairman, introduced Thomas L. Martin of Brigham Young University, Provo, Utah, who spoke compellingly on the deficiency of trace elements in the soils of this region, as elsewhere, and pointed out the results of this lack. A. F. Hoffman, Orchard Soil Specialist, discussed Chlorosis—A Deficiency Symptom.

The afternoon session was given over to Insects! A Canadian sound film—Insects in Action—showed the common vegetable garden pests magnified to many times life size. Comments by Gordon Mickle. N. D. Wygant, Bureau of Entomology, Fort Collins, discussed insect infestations and means of control.

The Annual banquet of the Association was held Tuesday evening, attended by 180 members and guests. The speaker was Arthur H. Carhart, Colorado author and conservationist. After some entertaining "tall tales" he discussed very seriously the Conservation Needs in Colorado.

MARCH

Oh, blasts that blow and snows that snow,

Thermometer that sinks too low,

Desist I beg, I plead, I pray!

I've garden work to do today.

How can I prune a willow tree

When your winds keep it switching me?

How can I spade a garden spot

Or rake a lawn or groom the plot?

Please, Winter, when your act is done,

Make one quick exit—only one!

Your encores wreck my best-laid plans

And freeze ice in my sprinkling cans!

—MAUD McCORMICK.

NOTES ABOUT THE LIBRARY

By ALICE WOOD

JOHN JAMES AUDUBON

A DRAWING, "Rusty Grackle on Black Haw" by John James Audubon decorates the library at Horticulture House. Also in the library is the very beautiful book, "The Birds of America", published by the MacMillan Company. In this book are reproduced the original drawings from the Elephant Folio of Audubon's, "Birds of America". Since Audubon painted the birds in their native habitats they appear animated and natural.

In Donald Culross Peattie's, "Singing in the Wilderness", Mr. Peattie writes in a lyrical vein of Audubon's wanderings and his close communion with the birds of America. He comments, "Audubon had the unique gift of magnifying the minutest details of plumage in the foreground while keeping a distant background, with the most attenuated perspective, still clear and arresting." This book is a fitting tribute to a great naturalist who "walked with a woodsman's tread, venturing courageously on unbroken trails, missing not one bright wing in the bushes, exulting in the gift of life itself, passing it on as a creator to others."

WOMAN'S HOME COMPANION GARDEN BOOK

The Woman's Home Companion Garden Book just published by Doubleday & Company was written by fifty horticultural specialists and edited by John C. Wister, Director, Arthur Hoyt Scott Horticultural Foundation. It covers six geographic and climatic garden regions, garden making and practice, plant material and plant science, thereby being a valuable addition to garden literature for the entire United States and Canada.

The chapter on the Rocky Moun-

tain states was written by Milton J. Keegan who will be remembered by readers of "The Green Thumb" as the author of the authoritative and beautiful issue, "Lilacs for Colorado" (December 1944). Since this region has long been the forgotten country horticulturally it is gratifying to find a chapter on Rocky Mountain conditions included in this finely illustrated and comprehensive garden book. We take pleasure in complimenting Mr. Keegan on his text.

OUR FLOWERING WORLD

By RUTHERFORD PLATT, *New York
Dodd, Mead and Company*

This is an important book. Mr. Platt writes simply but eloquently on a subject of profound significance to all of us. In three divisions: "The Power Behind the Landscape, the Woods of Time and the Modern World of Plants", the author conveys to the reader his feeling for the mystery of plant life. We are told of the theory of drifting continents and how "plants have traveled far and survived an eternity to reach us". The photographs in color and in black and white are superb.

The conservationist and plant lover will read "Our Flowering World" with deep appreciation. To the novice it should open up a new world, the wonderful world of plant life.



In spite of the horrors that the people have suffered and the discomforts and anxieties that have still to be borne, the majority take great pride in their gardens. The English are a flower-loving people and in the most unsuitable conditions can manage to grow a plant or two.

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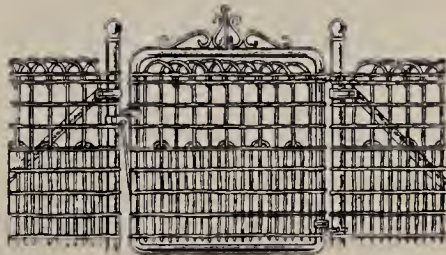
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When soil crumbles like this, it's dry enough to spade.



When soil makes a mud pie, it's too wet to work.

"As soon as frost is out of the ground," say all the garden books, "and the soil is sufficiently dry, it's time to spade."

It is easy to tell when the frost is out, because the soil, which was as hard as a brick, becomes soft and muddy, so that at first you are in danger of sinking in up to your ankles when you walk on it.

Every gardener is anxious to get started as soon as possible, and there is danger that this impatience may cause him to work his soil before it is ready, a mistake which may cause serious difficulties which will last all season.

Then how can he tell the very earliest moment when it is safe to spade?

The most reliable test is a simple one—call it the mud-pie test. Pick up a handful of soil and pat it between your palms as you used to do in childhood; if it holds together and makes a nice mud-pie, then it is too wet to spade. Keep off soil when it is in this condition, lest you form clods which will prove troublesome all summer.

The more clay the soil contains, the more injury it will suffer if spaded when too wet. Yet clay soil should not be worked too dry; in fact, you can seldom spade it then, for it is too hard.

There is a point between the two extremes when a handful of soil, patted between the palms, will crumble. It is not dry, but slightly moist, yet not wet enough to hold together in a mud-pie. At this point, even clay can be spaded easily, and will break up without forming clods. When the test indicates that this favorable condition prevails, do not delay spading, otherwise the soil may dry out unduly, and compel you to wait for heavy rains to restore the right degree of moisture.

DON'T forget to clean up that vegetable plot as carefully as you do your flower garden. Put on a good layer of manure which can be spaded under in spring.

Back Cover — Epidendrum — Sepals and petals pale green spotted with dark green; lip white with green spots.



The Green Thumb

APRIL, 1948



INDOOR MEETINGS IN APRIL, 1948

*At Horticulture House Unless
Otherwise Indicated*

Friday, April 2—What To Do About the Dutch Elm Disease, by a Panel of Experts. *This meeting will be held at the Evans School, 11th Ave. and Acoma St., 7:45 P.M.*

Thursday, April 8—Denver Rose Society, 8 P.M.

Friday, April 9—Life in India, 7:45 P.M., Mrs. F. S. Mattocks.

Friday, April 16—How to Interest Children in Horticulture, 7:45 P.M. Carl Herzman, Denver County Agricultural Agent.

Tuesday, April 20—Notes for a Beginner's Garden, 10 to 12 A.M. Mrs. Persis Owen.

Wednesday, April 21—Research Committee, 7:45 P.M.

Friday, April 23—Movies of Trees and Gardens in Mexico and Florida, 7:45 P.M. Dr. I. D. Miller.

Friday, April 30—I Hate Trees, 7:45 P.M. Carl Feiss.

OUTDOOR PROGRAMS

Mrs. Anna Timm, Outdoor Programs chairman, announces that her committee has planned four week-long botanical expeditions and four short week-end trips for this summer. The longer trips will be taken in the first part of the months of May, June, July and August and will include some of the wildest and least known parts of the state. Several short bus trips and walks are planned for all who care to attend. Other trips scheduled include the established Botanical Reserves where a census will be taken of the plants growing there. There will also be scouting trips to locate further reserves. The definite schedule for each month will be given in "The Green Thumb."

The April schedule is as follows:

April 11—Trip to the Hogback to find the first wildflowers of the season. Meet at Horticulture House, 9 A.M. Mrs. Kathryn Kalmbach, leader. Round trip driving distance about 25 miles; walking distance about 3 miles.

April 25—Trip to explore the Pinyon Grove north of Fort Collins. Meet at Horticulture House, 8:30 A.M. Round trip driving distance about 75 miles; walking distance 1 mile. Bring a pocket lunch and wear outdoor clothes.

Prof. J. V. K. Wagar will lead the trip and will conduct the party to several other points of historic and botanic interest in and around Fort Collins.

Please let us know as much in advance as possible if you plan to go on any of these trips so that we can help arrange transportation. Also let us know if you can furnish a car on a share-the-cost basis.

NEW HOURS AT HOUSE

Horticulture House will be open for the transaction of business and for the use of the Library each weekday, Monday through Thursday, from 10 A.M. to 5 P.M.; Friday from 10 A.M. to 7:30 P.M.; Saturday from 10 A.M. to 1 P.M. A librarian or horticulturist will be here during these hours to assist members.

Other hours may often be arranged by appointment.

Meetings each Friday evening: Lectures, discussions and pictures on various horticultural subjects.

Meeting of the Denver Rose Society each second Thursday evening of the month.

Meeting of the Research Committee each third Wednesday evening of the month.

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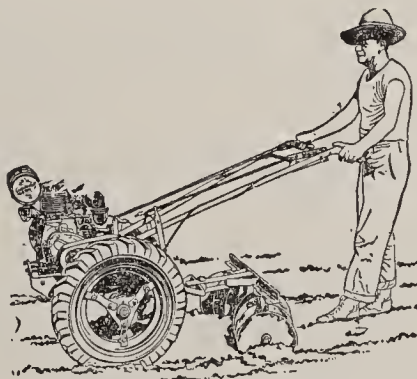
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Whatever a gardener may want in materials or services will be found by consulting the advertisements in this "Green Thumb." Almost all the first class seed, nursery and landscape firms are now represented here.

We appreciate very much the support that commercial firms have given our advertising section. All of this has come without any high pressure selling but through a desire by these firms to assist the Association and an appreciation by them that "The Green Thumb" does reach most all of the good gardeners of the state.

You can encourage them by letting them know that you read their ads. We have in this issue come very close to our limit of eight pages of ads.

Thank all of you.

A MEMORIAL LIBRARY FUND

Good friends of the Association have been working for several months on a plan to make it convenient for people to give donations of books or money to The Helen Fowler Library at Horticulture House as a memorial gift. There is now a supply of cards available on request which can be sent to the family or friends indicating that you have given a certain amount to the Library Fund. Receipt cards are also provided for the donor.

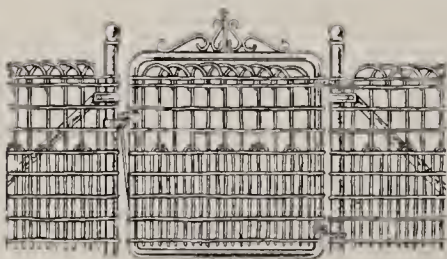
The idea of sending something useful and permanent as well as, or in the place of flowers, is steadily gaining favor. In the case of the death of a friend or relative just send in the amount you wish to donate and we will mail the cards. Many books have already been given in this way.

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JUVENILE PROGRAMS

The Juvenile Programs Committee, under the chairmanship of Mrs. Josiah Holland, has been working for many weeks to develop a program whereby the greatest good can be done in interesting more children in Nature and gardens. Mr. Paul Nesbit, well known naturalist from Estes Park, was brought down to Denver to advise the committee and demonstrate some of his teaching methods. Representatives of many of the youth organizations of the city have met in a joint committee and have decided that the first need is a leader training institute. This is being arranged by Mr. John Rishel who has had many years experience in this kind of work. There will be four sessions; the first one to be held at Horticulture House at 7:30 P.M., Tuesday, April 26th. The other sessions will be held from 2 to 5 P.M., Saturday afternoons, May 1st, 8th and 15th. The last session may be continued into the evening to admit of demonstrating a good campfire program. Our leading experts in Nature teaching methods will assist in these demonstrations. All those who are interested in learning the best methods of interesting children in the plants, birds, rocks and other things of Nature around them are invited to attend.

The Green Thumb

A Bulletin of the
COLORADO FORESTRY AND HORTICULTURE
ASSOCIATION

Organized in 1884

GEORGE W. KELLY, Editor
MISS ALICE WOOD, Assistant Librarian
MRS. C. A. BARBOUR
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Published Monthly.

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Vol. 5	APRIL, 1948	No. 4
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DUTCH ELM DISEASE FOUND IN DENVER

One of the most serious situations in the history of Colorado Horticulture has been brought about by the discovery of the Dutch Elm Disease in Denver recently. Most of the American elm trees in the state are so weakened by the attacks of the Elm scale and by general neglect that they are all set for the Dutch elm disease to finish them off. Federal, state and city officials and experts are working on the problem and will soon make their recommendations for control. The first step will be a thorough survey to determine the extent of the infection at present, then they will be able to offer some definite procedures for control. Our isolated position in relation to the earlier settled parts of the country and the fact that there are no native elms will be much in our favor, and there will be an opportunity to work out some newly developed methods of control.

In the meantime owners of trees and tree workers can practice and preach a few safety-first principles. 1. Do not carry elm limbs from one tree or part of town to another. 2. Do not use tools on a tree until they have been thoroughly disinfected to remove any possibility of carrying infection from the last tree used on. 3. Be sure that all trees are thoroughly watered. Several THOROUGH waterings a year are more effective than several light sprinklings a week. 4. Begin a systematic program of fertilization. Consult your tree man or Horticulture House for recommendations as to how to properly feed trees.

As the experts develop more definite recommendations for control we will attempt to keep you informed. Be prepared to cooperate in whatever program is adopted by the city, state or federal officials. This may be an ex-

pensive and bothersome procedure, but it will be worth any sacrifice to enable us to preserve some of our beautiful elm trees.

The Dutch elm disease has destroyed untold thousands of trees throughout America. This disease (*Ceratostomella ulmi*) sometimes combines with another virus disease called Phloem necrosis. In one year these two diseases combined destroyed 10,000 elms at Columbus, Ohio; 20,000 at Dayton, Ohio; 3,000 at Indianapolis, Indiana; 5,000 at Peoria, Illinois, and 1,500 at Kansas City, Missouri. During the past four years these diseases have killed an estimated 25,000 at Columbus, Ohio.

Mr. John W. Swingle, who has done considerable research on the Dutch elm disease, has advised that a more intelligent survey will be possible after the leaf development in the spring because of the external factors that are indicative of the presence of this fungus will be more in evidence. He gives the following description of Dutch elm disease symptoms: This disease causes the leaves of a branch or the entire tree to wilt, yellow and drop, or sometimes dry up and hang on as dead, green leaves. The very tip of a diseased twig may form a shepherd's crook. The small branches may bend upward and curve in toward the center of the crown. Woodpeckers may drill holes in or shred the bark of dead branches that become infested with bark beetles. The last three symptoms are helpful in locating diseased elms during the winter and spring months when leaves are absent.



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THE WEEK-END GARDENER

THE buds on the Maple and Elm are swelling this afternoon which reminds me that it will not be long until they are in leaf. Bad weather has prevented me from having my trees sprayed for scale insects, so I'll suggest to my tree man that now might be a good time to do the work. I suppose that everyone else is having the same idea about now and I'll have to wait my turn. I wonder sometimes if it is worth the expense to spray my trees so carefully when my neighbors pay no attention to theirs and the insects come right back onto mine. We must see to it that the city adopts a system whereby they can spray all the trees in certain areas of the city at one time and really clean up the pests. This would cost everyone much less and do a thorough job.

The Oldtimer tells me that I should begin to watch my Colorado junipers for signs of aphid damage. He says that most of the Colorado junipers in town have been damaged to some extent by aphids and that they may start to work following even a few warm days. He says that the presence of ants running up and down the tree usually indicates that there are aphids at work. If I want to be really sure I could spray with a contact poison like Black Leaf 40 every ten days, or it is likely that one of the new chlordane sprays will give longer control.

As the first warm rains come I should remember to check my Colorado junipers for signs of the Cedar-apple gall. The Oldtimer tells me that this disease works in connection with the hawthorn trees and must have both kinds of trees in order to develop. The new fungicide, "Fermate", has been used quite successfully in controlling the spread of this fungus disease but removal of the host trees is still the most effective treatment.

U. S. FOREST SERVICE DONATES PICTURES

Through the kind influence of our genial members, Fred Johnson and Don Bloch, the U. S. Forest Service recently presented three fine framed pictures to the Association. Two are scenes in the White River National Forest, namely, Maroon Bells and Trappers Lake. The third is a large ponderosa pine which Jay Higgins, the photographer, found in the Uncompahgre National Forest. It stands beside the Divide truck trail on the Uncompahgre Plateau, south of Carson Hole, and it is about 100 feet in height and just under four feet in diameter. Higgins estimates its age at 350 to 400 years. We hereby express our thanks and appreciation.

LEN SHOEMAKER.

WANTED—TYPEWRITER

With the great increase in membership has come greatly increased work in connection with keeping the membership records. Mrs. Stella D. Hare has been employed to keep these membership records, but has had no desk or typewriter. A desk has recently been loaned us but one typewriter previously given the Association has had to do for three people at the House. If you have an old typewriter which is still in good order or can be put in order that you would like to loan or give us it would be put to very good use.

Another item of equipment that we need very much is an *old-fashioned* projector for showing the old-style large slides. We feel sure that at least one of our members has such a projector which is not in use.

A Five-Star Shrubbery Border

By EDMUND WALLACE

NOTHING will help you forget winter more quickly, nor announce spring more flamboyantly than the Forsythia or Golden Bells. Last spring gave us in Colorado an unusual display of the yellow flowers completely covering the branches in such masses that they literally bent with their own weight. The Flowering Almond and Japanese Quince are equally attractive in the early spring. We must, however, curb our enthusiasm in using these early flowering shrubs too generally in the shrub border. Colorado's climate is not always so conducive to the profuse flowering which we witnessed last spring and, with the exception of the Quince, these shrubs have nothing to contribute during the remaining fifty weeks of the year.

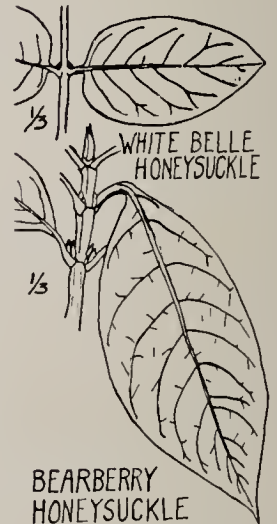
The "five-star" shrubbery border must be planned to include a pleasing balance of spring and summer flowers, summer foliage, showy fruit, and fall and winter color.

Some of the Shrub Roses have probably the most striking bloom of any of our shrubs but depend upon the greenery of the shrub border to compensate for their scarcity of foliage. The Austrian Copper and yellow Hugonis Roses are among the more attractive of the shrub roses hardy in Colorado. The Floribunda Roses, which bloom all summer, come in a good range of colors and should be used more. These are best planted closely — about 14 inches apart. Groups of three or five of a variety placed in front of the border create a superb color display.

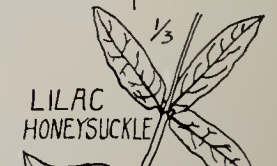
The Virginal Mock Orange, if given a partly protected spot in the



SARGENT CRANBERRYBUSH



BEARBERRY HONEYSUCKLE



border, will produce lovely semi-double fragrant white flowers in June and throughout the summer. The Buddleia or Butterfly Bush, with its colorful spikes of flowers, is a good addition but should be treated as a perennial, as it dies to the ground each winter. Its flowers are very fragrant and attract butterflies.

Others to be used for their flower effect are the French Lilacs, Double-flowering Plum, Thimbleberry, Garland Spirea, True Red Honeysuckle, (*Lonicera zabeli*), and Snowball Viburnum.

If your yard is small and the size of the shrub border limited, shrubs must be selected which will contribute beauty to the border throughout the year. An outstanding example of this is the Korean Barberry with large leathery leaves and long clusters of small yellow flowers in spring, followed by bright red berries and brilliant fall foliage color. Another example among the larger shrubs is the Native Haw. In the spring it produces masses of white flowers and in the fall bears persistent red fruit. Its yellow-brown bark adds color to the border in the winter.

There are a number of "two-star" shrubs contributing fall and winter color with their fruit or colored stems. The Euonymous and Cotoneasters are notable examples. Euonymous atropurpureus or Burning Bush has a rich fall color and attractive red and orange fruit hanging on till late in the fall. The Peking Cotoneaster, despite its insignificant bloom, is very desirable for its clean shape, glossy dark green leaves, and attractive black berries which hang on all winter. Other "two-star" shrubs include the Sea Buckhorn with silvery leaves during the summer and orange berries in fall; the Blue Leaf Honeysuckle with blue-grey foliage and pink spring

flowers; the Morrow and other Honeysuckles have creamy white flowers in May and yellow or red fruit from August to late fall; Dwarf Ninebark covered with white flowers in spring and followed with attractive red-brown seed pods in summer and good color in fall; the Nanking Cherry having beautiful pink blossoms and red edible fruit; and the Redleaf Rose adding color to the border with its dark red leaves and stems in the summer and persistent fruit in fall and winter.

For those with ample space, there are numerous shrubs which are particularly striking in only one characteristic. The Red-twig Dogwood is often planted for its handsome winter appearance. It lends a tinge of landscape color at a time when color is generally lacking. This shrub is particularly beautiful when snow on the ground brings out the red of twigs and branches in fullest color. It is especially good in association with evergreens.

Attractive for their fruit are: Mountain Ash, Wayfaring Tree, Snowberry, Coralberry, Buckthorn, Bladder Senna, and Dolga Crab.

Shrubs having colorful summer foliage include Purple Plum, Purple Barberry, Leadplant, Golden Elder, and Redsilver Crab.

For fall color, the red leaves of the Ginnala or Amur Maple are among the most brilliant. Others include the Sumacs, Spireas, and the already mentioned Korean Barberry, Euonymous, Cotoneasters, and Dwarf Ninebark.

There are other shrubs which can be used successfully in the well-balanced border. Care must be exercised in selecting only those which grow well in your locality. Obtain the best of them and be certain that they are hardy. Height, shade, and type of soil should also be considered in making one's selection.

THE WEEK-END GARDENER

TODAY is the kind of day that makes gardeners. I want to get down and roll in the soil just like Dr. Martin said. The fragrance and feel of good soil really does something to me at this time of year. When I was a small boy following behind my brother as he turned over the soil with a walking plow I knew that I must always be working in the soil.

My neighbor across the street has just moved into a new house and he can't feel my enthusiasm for the soil. It just appears to him as "that sticky stuff which is tracked into the house" and almost sends his wife back to Mama. He asked me to explain the difference between his soil and mine. I expect that he is another victim of "contractors soil." I asked the Oldtimer about it and he said that it would probably take years to make a great deal of difference in his soil; that he should start to improve the physical quality of his soil by working in quantities of peat, leafmould, manure and compost. If he had watched closer and seen to it that the good top soil was not all covered up and the poorest subsoil left on top he would have saved many years of discouraging work.

The Oldtimer tells me that it is important to keep soil loose so that air can penetrate to the roots. That may explain why plants do not grow well when the soil is kept too wet or is allowed to become very hard on the surface.

The Oldtimer also tells me that now is the time to check up on the chemical quality of my soil. That is something that I cannot tell much about without expert help. He tells me that practically all our Colorado soils are alkaline or at least not acid, so I know that I should add humus and in extreme cases some chemical in limited quantity. My oak tree looked rather pale last fall, and the flowering quince had yellowing leaves most of the summer. He calls this condition Chlorosis and says that it may often be corrected by the application of a little Aluminum sulphate or Iron sulphate.

WHY DON'T WE GROW MORE PRIMROSES?

By FLORENCE ARNETT

WHEN one remembers that Primroses were grown and loved and written about as long ago as the fifteenth century, and probably even earlier, it is surprising that during the past fifty years they have almost disappeared from our gardens. Many people know them only through song and poetry. Before the American Primrose Society was founded in 1941 it was almost impossible to find anything written about growing primroses; one had to experiment and too

often failed. At last primroses are being seen again and what an addition they are to the spring garden!

The Polyanthus Primrose is the showiest, the easiest to grow and not hard to acquire. They come in many colors, from white, through pinks, to very dark red, usually with a small yellow eye and often rimmed with a hairline of white. They may also be had in shades of blue and in bronze shades that are very attractive. No plant is more generous in its bloom

and the six-inch stems, topped with an umbel of one-inch wide flowers, give contrast in the bed to the spikes of blue grape—hyacinth and other bulb blossoms seen at this time.

Almost all primroses require the same growing conditions: a deep, fat soil enriched with bone meal and old cow manure; light shade and plenty of moisture. On this subject, Mrs. Wilder writes, "—they want to be coddled—to have a little leafmold scratched in among them now and again—to be watered with manure-water at times and to have the ground about them nicely stirred and never to be allowed to become dry—in short, to be petted and indulged and kept constantly in mind, and what a pleasure it is to do these things for such undeniable loves and how they do respond to it."

Primula auricula is the wild primrose, said to grow under every bush and hedgerow in England. It comes in many shades now but the wild form is yellow and has a balmy fragrance. As its name implies, there is only one flower to each stem. These bloom in April and May. The nineteenth of April is celebrated in England as Primrose Day. Blooming earlier, if the spot is quite damp, you may have the lavender balls of *Primula denticulata* on straight, stiff stems. Also on tall, stiff stems, growing in tiers, come the flowers of *P. japonica*—another lover of moisture.

It is still possible to find a few varieties of double primroses but many of the lovely varieties commonly grown in cottage gardens in that long, long ago have been completely lost. The few to be had now are descendants of those found in very old gardens in Scotland and Ireland, where fashions in flowers did not change. The double primroses require a little more protection, both from winter winds and summer heat.

Primula auricula, with its velvety, round, flat bloom usually with a large white or yellow eye, is assuredly a must for the primrose grower. Its foliage is smooth and often serrate. It comes in many colors, even grey or tan. This is the most exciting primrose to grow from seed as they do not come true and one pod of seed may produce plants bearing flowers of several colors.

The climate of Colorado is not ideal for primrose culture. They thrive best in a damp atmosphere such as is found in our Northwest. Oregon, with its frequent rains, is probably the most favored spot for these flowers of the spring but if one loves and enjoys primroses they can be made to flourish by planting in a moisture-retentive soil, protected from midday sun and by judicious use of the hose in dry weather. Spring is not complete without at least a few primroses and once you have grown them you can never get enough of them!



FLOWERS FOR VETERANS

Four walls and a ceiling are a dreary prospect for a veteran sentenced to several months in bed. No one knows better than florists and individuals interested in flowers, how welcome a color variation is in this setting. Nothing is more welcome to these boys than a dash of floral color or the intrigue of a dish garden on the bedside table.

Several thousand veterans are in the Military and Veteran Hospitals in and around Denver. They are still engaged in a "war of survival."

All individuals and floral concerns who would like to help brighten the long days for these boys should contact the Community Service to Camps and Hospitals, Denver Chapter American Red Cross, AL 0311, Ext. 16.

THE COLORADO FORESTRY REPORT

ALLEN S. PECK

THE long awaited report on a survey of state forestry administration in Colorado, sponsored by the Colorado Forestry and Horticultural Association was made public February 20 and a specially bound personal copy formally presented to Governor Knous by Vice President Robert E. More. Accompanying Mr. More were State Forester Everett J. Lee and J. J. Sylvester representing the State Land Board, John W. Spencer, member of the National Council of the Society of American Foresters, Arthur L. Nelson, Chairman of the Central Rocky Mountain Section of that Society, and George Kelly and Allen S. Peck of our Association. Governor Knous expressed great interest in the state's forestry activities and said that he felt sure the report would be helpful in carrying out some plans he has in mind for reorganizing and expanding these activities.

Important among the 20 recommendations which summarize the findings of the survey is a proposed radical change in the Land Board which under present law acts also as a Board of Forestry. The Board would be expanded from 3 to 7 members including the Governor as Chairman and would serve without pay. It would be known as the Lands-Management Board and would deal with policies, leaving execution to a Director with divisional chiefs handling lands and surveys, forestry, grazing, mineral lands and parks. Other proposals call for a sound forest fire protection organization built around a county fire warden in each of the 42 forested counties, under the direction of the State Forester; a forest staff sufficient to give competent management to all state owned woodlands; and to furnish advice and help to farmers and

other private land owners in tree planting and good forest management practices; establishment of state parks in eastern Colorado; limitation of leases of state land to 5 years and of numbers of livestock and periods of use, for the purpose of restoring and maintaining maximum productivity.

The report, which is a comprehensive study of the state and private land situation in Colorado, is based on a 3 months' survey made last summer by Alfred B. Hastings, a trained forester with many years of experience. It was financed by the Charles Lathrop Pack Forestry Foundation and so cost the state nothing. It was one of several such studies made under the supervision of a joint committee representing the Pack Foundation and the Society of American Foresters, in states requesting this service. When officers of the C. F. & H. A. learned some two years ago that it might be possible to arrange for one of these studies in Colorado they urged state officials to seek it, with the result that Governor Vivian made formal application late in 1946. In preparing his report Mr. Hastings had the aid of John B. Wood, another experienced forester, as consultant. The report was later reviewed and approved by the joint "steering" committee of five nationally known foresters.

The report recognizes the exceptionally high value of Colorado's forest lands as watersheds and emphasizes that such lands, conservatively estimated as worth \$50 per acre for water production alone, fully justify the cost of the best possible protection and use. To quote, "It has been rather widely assumed that forestry in Colorado is almost exclusively the function of the federal government, with its nearly 15 million acres of

forest land. It has not been generally known that state and privately owned forest and brush land of watershed value which needs public protection totals nearly $7\frac{1}{2}$ million acres. In matters of protection and development these $7\frac{1}{2}$ million acres are the responsibility of the state, with the federal government and the counties playing cooperative roles. Public functions embrace protection from fire, insects and disease; reforestation activities; certain aspects of erosion and grazing control; administration of the considerable area of state land; forest and range research; assistance to timberland owners in the management of their lands; and information and educational programs. That the state legislature has not taken its forestry responsibilities seriously is indicated by its appropriation of a total amount of \$7,200 for state forestry work in the fiscal year 1948."

The program suggested calls for an expenditure of \$30,000 in 1949 and increases each succeeding year, reaching the sum of \$68,900 in 1952.

The survey is sure to prove an important contribution to Colorado's progress. We are greatly indebted to the Charles Lathrop Pack Forestry Foundation, the Society of American Foresters, the Joint Committee and Henry Clepper, its secretary, and particularly, of course, to Alfred Hastings who made the field survey and drafted the report.

HIGHLIGHTS FROM THE PRESIDENT'S REPORT FOR 1947

Mrs. Evans reports that 1947 has been a year of progress for the Colorado Forestry and Horticulture Association and for our activities to stimulate public interest and to carry forward the objectives of the association. Horticulture House was completed

and opened during the year. The library of horticultural and garden books is established and has been named The Helen Fowler Library. Many meetings have been held and programs given at the House both by the association and other societies. In addition, The Green Thumb is now published monthly and carries advertising to call to the attention of the members the best in horticultural services, material and equipment.

It is interesting to know that articles by writers in The Green Thumb are appearing from time to time in Eastern publications. Our editor, George Kelly, has been named Zone 5 editor for the House Beautiful magazine and has contributed to the House Beautiful Practical Gardener for 1948. Mr. Robert More has a most interesting article on Evergreens in the American Home for February, 1948. Mr. Milton Keegan had a piece recently in the Women's Home Companion Garden Book. Mrs. G. R. Marriage is a frequent contributor to American and English publications. Mr. Kelly has attended several important national meetings during the past year, including the National Shade Tree Conference and the Annual Meeting of the American Horticultural Council, both held in Cleveland. He was elected a director of the Council.

Another gratifying event of 1947 occurred when the City of Colorado Springs set aside, under the care of the association, three important Botanical Reserves.

In any and all its activities, repeats Mrs. Evans, the Colorado Forestry & Horticulture Association could not long exist nor could it accomplish effective work without the enthusiasm, time and effort of the many volunteers who serve on committees and work at Horticulture House.



Tilia platyphyllos—Leaves velvety beneath; fruits ribbed, all leaves half natural size.

CULTIVATED LINDENS OF THE DENVER-BOULDER AREA

EDNA L. JOHNSON
University of Colorado

THE lindens or basswoods, members of the family *Tiliaceae*, are among the best known ornamental trees, desirable because of their comparatively rapid growth, handsome foliage, and fragrant flowers. Although lindens may be pruned into geometrical figures characteristic of the formal garden, the beauty of their natural forms has long been appreciated. The most famous avenue of them in Europe is probably "Unter den Linden" in Berlin. In England,

where they are known as lime trees, avenues of them are common features of the landscape.

The slender-stalked leaves are simple, alternate, usually heart-shaped, but often more or less one-sided. The margin is serrate, having notches or small teeth, pointing forward.

The fragrant creamy-yellowing flowers, which are borne in drooping clusters of 5 to 20 on leaf-like membranous bracts, appear after the leaves are fully developed. Each flower bears



Tilia cordata—Note heart-shaped leaves and small globose fruits, all half size.

five sepals, five petals, and many stamens. In the American species, there is opposite each petal, a spatulate petaloid scale (staminode). The linden flowers yield large quantities of nectar which attract hordes of bees during the blossoming time. In northern Europe, linden honey is considered unsurpassed in flavor and delicacy. Oil, obtained by distilling the flowers of European species, is used in perfumery.

The globose or ovoid, woody, nut-like fruit remains attached to the slender bract which permits distribution by the wind. The fruits which contain one to three seeds are usually covered with short, dense, matted hairs.

Tilia, with its approximately 30 species, ranges throughout most of the

temperate regions of the Northern Hemisphere, with the exception of western North America and central Asia. It always has been one of the most highly valued trees. The common name "basswood" may have originated on account of the bark which is made up of tough, fibrous, intertwined fibers. In pioneer times in the United States, and even in some countries today, these fibers were used for making shoes, horse collars, ropes, nets and various mats.

The soft, easily worked, even-textured wood of the American linden, which is free from prominent grains and knots, is a favorite material with wood carvers, cabinet makers, and manual training teachers. Valued for its white color, light weight, and good working qualities it is widely used for





interior finish, wooden ware, boxes, excelsior, and paper pulp.

The names of the lindens, and especially those in cultivation have been much confused owing to the variability of some species, and perhaps to the presence of many hybrids which have arisen, either spontaneously or in cultivation. A key is given below which will enable one to distinguish five species of this group which grow successfully in this area. There are included leaf, flower, and fruiting characters which permit use of the key at various seasons. *Tilia americana* and *Tilia heterophylla* are the two native American species considered, the

American Linden—Tilia americana. Left-hand tree on preceding page.

Photo by Edgar E. Warren

Large-leaved European Linden—Tilia platyphyllos. Right-hand tree on preceding page.

This and leaf photos by Floyd G. Walters

others being introduced. The scientific names used are those given in Bailey's "Standard Cyclopedia of Horticulture."

Key to Five Species of Cultivated Lindens

- A. Leaves large, 8 to 20 cm.; flowers with staminodes; fruit globose, not ribbed.
 - 1. Leaves light green beneath with tufts of hairs in the axils of lateral veins. (American linden) *Tilia americana*.
 - 2. Leaves with lower surface covered thickly with short hairs, white or often brownish (Southern basswood) *Tilia heterophylla*.
- AA. Leaves small, usually 8 cm. or less in length; staminodes wanting.
 - 1. Leaves with pubescence covering entire under surface; fruit ovoid, ribbed. (Large-leaved

Tilia vulgaris—Hairs only in axillary tufts; fruits ribbed.





stellate; this character is not found in other species. The leaf bases of the southern basswood are also usually cordate in contrast to the obliquely broad ovate leaves of the more common American linden.

The European lindens are marked not only by having a more compact growth habit than the American ones, but also by the presence of smaller and apparently more numerous leaves. *Tilia cordata*, known as the small-leaved linden, is easy to recognize because of its small dark green lustrous heart-shaped leaves, with a whitish bloom beneath, and by its small globose fruits. The so-called "common linden" and the large-leaved European one are often confused because they both have ovoid, conspicuously ribbed fruits. *Tilia platyphyllos* blossoms much earlier than any of the species

Continued on Page 24



Tilia heterophylla — Silvery hairs cause under surface of leaves to appear white.

European linden) *Tilia platyphyllos*.

2. Leaves smooth except for axillary tufts of hair beneath.

a. Leaves orbicular or heart-shaped, glaucous beneath; fruit small, not ribbed, globose, with thin shell. (Small-leaved European linden) *Tilia cordata*.

a. Leaves obliquely cordate, bright green and glabrous beneath, except for axillary tufts of hair; fruit ovoid, ribbed, with hard shell. (Common European linden) *Tilia vulgaris*.

The flowers of the two American lindens listed above have little petaloid staminodes which are absent in the European species. The conspicuous white woolly hairs on the lower surface of the southern basswood separate it from all other species here considered. Microscopic examination reveals that these hairs have basal radiating branches and are termed



Tilia americana—Under surface of leaves light green; fruits not ribbed.



TRY SOME LESSER-KNOWN SUMMER-FLOWERING BULBS

By GEORGE M. FISHER, *Landscape Architect*

NEARLY all Colorado gardeners grow, or are at least very familiar with the three well-known summer-flowering bulbs: cannas, gladiolus and dahlias but some of the lesser-known bulbs are certainly overlooked in gardening.

Consider such bulbs as Tuberose, Tigridias, Ismene, Tuberous-rooted Begonias and Fancy-leaved Caladiums, most of them known to good gardeners but seldom grown. All of these produce easily-grown terrace or border plants or striking pot plants for the patio. With the patio and the terrace becoming an important feature of outdoor living in modern home architecture, the summer-flowering bulbs are the answer for garden flowers.

For those gardeners who wish to go in for the more or less rare plants, try the bulbs of Zephyranthes, Galtonia, Montbretia and Sprekelia. Also several vine-like tuberous plants useful for climbing on patios and arbors are: Climbing Lily, Cinnamon Vine and Madeira Vine. Ask your florist about these summer-flowering bulbs. He probably has a good many of them in stock and if not he will order them for you for proper planting time in the Spring.

Tigridia

Few flowers can compare with Tigridias for brilliance. Their vivid color markings include yellow, orange, scarlet and purple. The large flowers with the spotted cups have the appearance of a tiger's face, hence the name of Tigerflower or Mexican Shellflower. The single flowers last only for part

of a day, but they are produced in profusion during July and August.

Tigridias are given about the same treatment in the garden as glads and are as easy to grow. They are tender plants, so should only be planted out when it is quite warm. They will grow in full sun or partial shade, and should be kept well-watered through the season. For showiest effect, plant Tigridias in groups, in rich, sandy loam soil, four to five inches deep. Purchase only the large bulbs from your florist or nurseryman.

Ismene

Ismene calathina, Peruvian Daffodil, or Spider Lily, is becoming very popular. The flowers are amaryllis-like and umbellate on tall stems, three to five to the stem, generally pure white with greenish stripes deep in the flower's throat. The flowers are delightfully fragrant and scent the whole garden on warm summer evenings. They are also fine for cutting.

These plants prefer a warm, sunny spot in the garden, with some screening against hot winds. Plant out the bulbs at dahlia-planting time, six inches deep to the base of the bulb in deeply-prepared, well-drained rich soil. The growth is rapid and the foliage stays bright green all summer.

Gardeners should try to save their bulbs, for if properly stored in a warm place they will bloom year after year. Dig them in the early fall, with green tops, roots and all left intact. Alike to Tigridias and Tuberose, the bulb clumps should not be divided until spring planting time, and the large central bulbs planted for blooming stock.

Tuberose

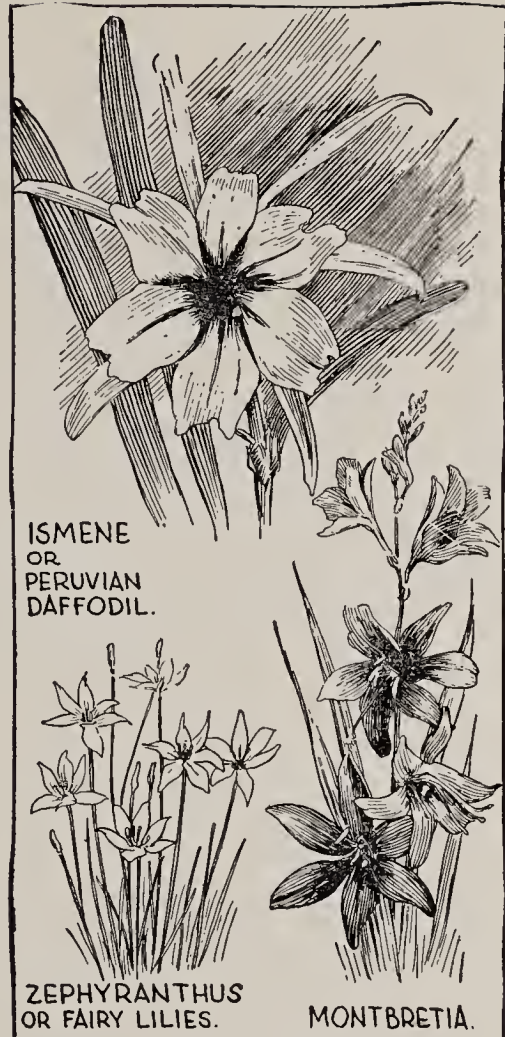
Another easily-grown familiar summer bulb is the Tuberose (*Polianthes tuberosa*) correctly pronounced tuberose. Their tall, showy spikes are fine for an evening garden, with waxy, white flowers and sweet Gardenia-like fragrance. Select the single-flowered Mexican types, as they bloom earlier and open more fully, and are better for the short Colorado summers.

Practice planting Tuberose as early as possible when the ground warms up. With successive plantings bloom may be had from July to frost. Plant the bulbs in full sun in rich sandy loam soil at a depth of three inches. Tuberose must be kept weeded and cultivated all summer and require plenty of water at all times. If you save your bulbs, and you should, dig them right after the first frost in the fall that kills the tops and place the clumps intact in warm storage.

Tuberous-rooted Begonias

These plants are well adapted for Colorado gardens as they like warm days, cool nights, and do splendidly at high altitude. Contrary to belief, they are not difficult to grow, but it is suggested that they be purchased from the florist as potted plants just as they are first coming into bloom. They must be used in fully protected shady situations, either as a pot plant or bedded-out in properly prepared soil.

Begonias are available in many bright pastel colors and foliage forms. The plants are dwarf and compact, six to twelve inches high with an abundance of flowers from May till frost. For bedding-out, plant after all danger of frost is passed in a soil mixture of rich garden loam, leaf mold and peat moss, well-mulched with a layer of peat. Fertilize occasionally throughout the season. They should



be watered once or twice daily and sprayed frequently, but do not water late in the day.

Fancy-leaved Caladiums

Fancy-leaved Caladiums in numerous colorful shades make excellent foliage plants for the semi-shady patio or summer conservatory, and harmonize well with modern architectural settings. Alike to Tuberous-rooted Begonias, they should be started by the florist. They prefer partial shade, but want plenty of heat at all times, and are not too well adapted to the higher altitudes. Their surroundings should be kept quite moist by frequent waterings and sprayings. Caladiums are rank feeders and should be fertilized every two or three weeks.

Some Rarer Bulbs

Some of the most popular of the more or less rare bulbs will be discussed briefly for gardeners who like to get acquainted with new plants. One of this group becoming very popular is *Zephyranthes*, popularly known as Zephyr Lily, or Rain Lily, mainly hybrids of *Z. atamasco* and *Z. candida*. The name Rain Lily comes from the fact that they often come in to bloom several times during the summer and fall after heavy rains or waterings. Various pastel shades of yellow, copper and pink flowers are available, blooming on stems six to twelve inches in height. They like warm, moist, shady places and good rich soil.

Montbretias

Montbretias, or Blazing Star are rapidly gaining popularity. Most of the cultivated hybrids are of *Tritonia undulata*. Their tiny corms are cultivated in a similar manner to gladiolus. They resemble glads, but the flowers are smaller. They are extremely showy in the garden; available in shades of scarlet, yellow and orange. The tall flower spikes make excellent cutting. Montbretias prefer full sun and rich composted soil. For best effects they should be planted in large groups or drifts in the border, where they will flower from August till frost from plantings made at intervals.

Sprekelia formosissima, also known as Aztec Lily or Jacobean Lily, is another bulb that should be grown more. The large, deep orange-scarlet flowers, borne on tall stems, are very showy, resembling orchids or butterflies in appearance.

Tuberous-rooted Vines

There is always a spot or two alongside a patio, or for covering porches or arbors, where interesting flowering vines can be useful and attractive.

The showiest of three vines which will be discussed is the *Climbing Lily* (*Gloriosa superba*). This vine is not too well known, but it is not difficult to grow.

It is a charming refined vine of five to six feet growth in a season when support is provided the tendrils. The hanging, frilled blossoms are yellow and red. It should be well adapted to Colorado areas and higher altitudes. Start from pots, with two-year bulbs planted in late winter, and bedded out when quite warm in partial shade.

For a rapid-growing vigorous vine, plant the tubers of *Cinnamon Vine*, (*Dioscorea batatas*). It grows rapidly to fifteen to twenty feet in the summer, and will do well in almost any situation and exposure. The foliage is attractive, glossy green and heart shaped, turning yellow after frost. Masses of tiny white flowers, with cinnamon-like odor are produced. Use the small, off-shoot tubers for planting as the old tubers get too large to handle.

The *Madeira Vine* is well known to most Colorado gardeners. It will grow in full sun and stand considerable heat and drought. It is more refined and less vigorous than Cinnamon Vine, only growing ten to fifteen feet in a season, but the vine has the same profusion of tiny, fragrant white flowers, produced late in the season.

CULTIVATE LINDENS

Continued from Page 21

considered and it may be distinguished by the velvety feel of the entire under surface of the leaf. *Tilia vulgaris*, on the other hand, has leaves which are glabrous beneath except for tufts of hair in the axils.

In the Denver-Boulder area, there are many handsome specimens of the five species listed; they are strongly recommend for planting along avenues or on private grounds.

Attention Members FLOWERS IN ACTION

On June 17th, at the Phipps Auditorium, the Association will present Mr. John Nash Ott, Jr., noted botanical motion picture photographer and lecturer. He will show his new all-color, time-lapse sound films. Plant growth of days, weeks and months can be observed with scientific accuracy in motion pictures within a few moments. R. Milton Carleton, President of the Men's Garden Club of Hinsdale, Ill., says: "The film should be of intense interest to every botanist and horticulturist, since it answers clearly many perplexing questions as to how plants grow."

Make a note of this date.

FORMATION OF THE COLORADO IRIS SOCIETY

Members of the American Iris Society and interested friends were invited to Horticulture House on February 19th to discuss the organization of a local Iris Society. There were thirty people present at this meeting, some coming from Boulder, Pueblo and as far away as Wray. All unanimously voted to form a local organization which was given the name, "Colorado Iris Society." Mrs. F. E. Winegar, 1955 So. Monroe St., Denver, was chosen as temporary President and Mrs. Richard D. Hall, 750 Kearney St., Denver, as temporary Secretary-Treasurer to serve until election of new officers in September.

THE WEEK-END GARDENER

IT looked like spring for sure as I drove home today. I saw several people out with their hose watering their lawns. I wonder if that is always a good thing to do at this season. I'll ask the Oldtimer. * * * He tells me that it may very necessary to water south slopes or against the south wall of a building, but that I would be doing more harm than good to begin watering regularly now unless the ground was really dry down deep. He says that grass or other plants should be compelled to send their roots down deep for their moisture, so that they can withstand the very hot days in summer. Maybe he is right, but it sure makes my lawn look good to sprinkle it now. But if I trained my plants to require watering less often I might have time to do many more necessary things in my garden.

I believe that I can tell pretty well now the shrubs and roses that are dead and those that came through the winter without damage. I'll get my clippers and go to work. I'll start on the climbing roses, for I see that most of the old stems are dead. If I can finish cleaning out the roses without losing my religion I'll tackle the other things.

While I have the clippers out I'll look over the little fruit trees. I saw a neighbor trimming his this morning and it looked easy. Now, how do you tell what to cut out and what to leave. I'll have to call the Oldtimer again. He tells me that cherry trees need very little trimming, but that apples and peaches require quite a lot if they have grown vigorously. He tells me to never cut a limb unless it is for some definite purpose. Limbs that rub each other or are too close together should come out and often the center of the tree needs opening up. Limbs that are too low or too high should be nipped back. There, they look better already. There are several limbs that I'll leave for next year, and maybe by that time they will be better or worse.

CHLOROSIS—A DEFICIENCY SYMPTOM

A. F. HOFFMAN

Orchard Soils Specialist, Palisade, Colorado

*Extract from paper read at Rocky Mountain Horticultural Conference
Denver, Colorado, February 3, 1948.*

CHLOROSIS in plants is a condition in which there is a loss of chlorophyll, the green coloring matter of plants. This condition results in more or less starvation. Without chlorophyll, the plant is unable to make the food it needs. Chlorosis is the extreme condition. The factors causing it may exist in modified form in normal-appearing plants but may affect these plants in other ways—resulting in less frost resistance, a faded color in the bloom, etc.

A variety of causes are listed as being responsible for chlorosis in plants: mechanical injury, chemical injury, excess water — especially during cool weather in early spring, poor drainage, lack of aeration, lack of sunlight, lack of essential plant food elements, fungus and virus diseases, stopping of the stomata by large amounts of dust. Different causes may result in different types of chlorosis.

We grow plants where they would not grow naturally. We change the character of these plants through breeding, at the same time paying little attention to the fertility changes required by the plant changes we have caused. We do not control erosion and leaching. We cover top-soil with sub-soil. In the case of ornamentals we remove part of the soil fertility by burning or dumping in the alley the leaves, lawn clippings and brush. We increase the salt content of the soil by the way we handle it. In brief, we change the physical and biological characteristics of soil as soon as we start to cultivate and water it.

The plant gets its food from the clay particles in the soil. Plant food is held around the clay particles and

if one kind of plant food exists in such great quantities in the soil that it crowds other plant foods away from the clay particles, the plant is unable to get the varieties of food it needs.

In general our western soils are alkaline. If the concentration of alkalis is great enough, other plant foods may become relatively scarce on the surface of the particles of clay. There is only so much room around a particle, just as there is only so much room on a chair. As a result we often have an iron-deficiency type of chlorosis in plants grown in soils that are high in iron! The lime crowds the iron off the chair. We say that we have a "tie-up" of the iron by the lime, or that we have a "lime-induced" chlorosis.

It is also probable that plants are sometimes not able to utilize available fertility of the soil because of some condition of the plants themselves—other than mechanical injury and disease. Common salt seems to be a cumulative poison as far as plants are concerned. Some trees, for example, do well in salty soil for several years after they are planted, then apparently build up accumulations until the amount of salt is toxic to the plant. When this happens, leaves become small, there is marginal scorching and a loss of chlorophyll in the foliage.

Three types of nutritional troubles may lead to chlorosis in plants—actual soil deficiencies, non-availability of plant food elements in the soil, and inability of the plants to use the food materials even though they exist in available form. There is a method of attacking each of these troubles: in

the case of a deficiency, the addition of the missing element; in the case of lack of availability, stimulating microscopic life in the soil and reducing the alkalinity; in the case of plants not being able to utilize available materials, removing the cause (thru drainage if the salt content is too high). So far this seems to be fairly logical but now the question of how to make a proper diagnosis rears its ugly head!

Perhaps the plant itself can be put on the witness stand? The plant will tell of a nitrogen deficiency by a yellowing of the leaves near the base of the current season growth, a stiffening of the growing shoots, small fruit and leaf size, a lack of winter hardiness. An iron deficiency will show in a yellowing between the veins of the leaf, the midriff and primary veins remaining green, small leaves, in severe cases a whitening of the leaves, die-back. So also with deficiencies of phosphorous, potassium, calcium, sulphur, magnesium, manganese, copper, zinc—all have distinctive symptoms. Learning to know these, we can at least suspect, if not diagnose the lack.

What are the recommendations for the control of chlorosis? Perhaps they should be divided into two main methods—soil management and emergency treatment. In soil management, fertilization, maintenance of humus and biological activity, cultivation, application of water and drainage should be considered. All of these things must be applied in the light of what is the balance-point or the optimum of the plant.

In the matter of fertilization, consider only the three macro-elements—nitrogen, phosphorus and potash. In most western soils, the first limiting factor is nitrogen. The majority of plants require from two to three times as much nitrogen as phosphorous. Yet this does not mean that these soils

will contain enough phosphorus to maintain plant life forever under all conditions. It has generally been supposed that all western soils contain a large amount of potash, yet many plants use more potash than nitrogen and phosphoric acid combined. It is only a question of time until more balanced materials are needed and we are now coming to the point where the use of all three of the macro-elements is indicated. At this point it may be well to mention the old controversy between the proponents of organic fertilizers and those who favor the use of some inorganics. Actually our own necessity eliminates any conflict. Experience with liquid inorganic fertilizers seems to indicate that the only magical property of barnyard manure is the humus it contains.

With this knowledge, it is recommended that you use barnyard manure when you can get it and the price is reasonable—fortifying it sometimes with commercial fertilizers. Use more nearly balanced complete commercial fertilizers and avoid applications that are beyond the needs of the plant, especially in the middle of the growing season.

Perhaps the most important recommendation of all is that the humus supply in the soil be maintained at a high level. Numbers, kinds and activity of microscopic organisms in the soil are dependent on the humus supply. Green manures are excellent for this purpose and also plant residues. When organic matter is in the process of decomposition, however, these organisms temporarily "tie-up" large amounts of nitrogen, so it may sometimes be necessary to apply commercial nitrogen if decomposition is proceeding at a rapid rate during the growing season.

Time and method of cultivation are important in the control of chlorosis. Too much of it may interfere with the

microscopic life of the soil. Avoid in particular deep cultivation in the middle of the growing season. The application of water should be to a depth greater than the penetration of the roots of the plant and there should be good drainage so that there will not be an accumulation of common salt and alkalis.

In very severe cases of chlorosis it is often desirable to use emergency treatments until a more permanent solution of the trouble can be made in the soil. We are using injections, soil treatments and nutritional sprays as emergency measures. Injections may be made in the form of dry material or liquid solutions in parts of the plant above ground or in the roots. Soil applications may be made by general distribution or by "pot-holing". Nutritional sprays may be applied with any kind of a sprayer that will do the job of covering all the foliage.

Editor's Note: While this emergency work should be done by professionals, soil management in the treatment of chlorosis can be undertaken by the owner after diagnosis.



SILLY SYLLILOQUY

I wished I knew a little more of what
it's all about;—??
Well, I hied me down to Horti. House
one day to find it out.
I found a wealth of everything that
makes this world go 'round;
Of shrubs and weeds and pretty
things, and worms down in the
ground.
And someday when I'm brave enough,
I'll master all the names
Like *Euonymous alatus*, and that
bug that climbs their frames.
Just now I must be satisfied to take
it by degrees,
But how I wish I knew them all—
could talk of them with ease.

E. T. L.

ORCHIDS TO KATHRYN KALMBACH

The results of Mrs. E. R. Kalmbach's work for horticulture will be felt in Denver for many years to come. How she finds hours enough in the day to do all the things she does is one of the mysteries that may never be solved. For many years now she has been a great influence for good in Garden Club work. She has worked in the Victory garden campaigns, and most recently has helped in the Judging schools. At present she is giving at least one day a week to putting the Herbarium at Horticulture House in order. This is a big and very important job.

Everyone likes to work with Mrs. Kalmbach. She never asks anything of her helpers that she is not willing to do herself. When she agrees to do a job it is as good as done. She is now anxiously awaiting the time when the wild flowers bloom again and she can go on more botanical expeditions to gather more specimens for her herbarium. The world needs more Kathryn Kalmbachs.



When sap starts in the spring, if we have neglected to straighten the young trees, is the best time to guy wire them. Keep a strong tension. In this way it will be a matter of just a year or two in most cases before the tree will be straightened.



Drawing by
Jack Harenberg

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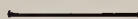
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REASONS FOR NATURE TRAINING FOR CHILDREN

Condensed from Paul W. Nesbit's book, "Instructive Nature Games", published by the Author at Estes Park, Colorado.

Editor's Note: We realize that in city schools it is often very difficult, even impossible, for teachers to create outdoor activities or to hold nature trips for their pupils. It would, however, be a step in the right direction if active nature games could be made a part of the school day.

OUR lives have become so pampered and artificial that we need large doses of nature in order to bring about a proper balance. As we get older we may return more easily to those activities in which we engaged as children but it is more difficult for us to undertake new activities which have been foreign to our experiences. During childhood is the time to become familiar with nature.

Schools tend too much to restrict children's desire for physical activity and to coop them in pools of partially stagnant air exposing them to contagious diseases, at the same time softening their resistance to them. A child's physical development sacrificed at the altar of a school desk can never be fully regained. In contrast, much subject matter can be taught more efficiently later. First we waste effort opposing children's desires to be active and out of doors. Later in the educational process, we waste effort in prodding the then anemic youths to accomplish something and even to take part in physical activities. Still later in life individuals and society pay for poor health.

Pupils in schools study too much *about* things instead of studying the *things* themselves. Nature, when taught at all, is likely to be taught "in a morgue of pickled specimens" or in an unnatural prison. Assignments are emphasized at the expense of experiences. Information and understanding can best be gained during

or after actual experiences—not before. Knowing should be more closely related to doing and enjoying. Children and teachers need more variety in school work. They particularly need relief from paper, pencil and book work. Nature combined with games can help to meet these needs.

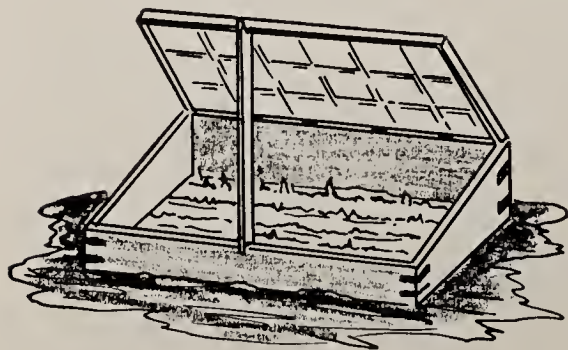
Nature itself, and the problems of taking care of oneself in a natural environment, tend to develop independence and self-reliance.

Schools heap inactive forms of recreation, such as reading, music, and various intellectual and artistic pursuits upon people whose lives are already too inactive. In contrast, nature furnishes an important intellectual interest which may lead one toward healthful activities out of doors. The active sports upon which schools do place most emphasis are not those which will be participated in except during the fleeting years of youth, after which comes the much longer time of adulthood and its too frequent physical stagnation. Schools need to place more emphasis upon forms of recreation which will furnish healthful outdoor activity throughout life. Too many of the recent products of our schools turn to liquor, night clubs, and over-stimulating amusements for their recreation. They depend too much upon being entertained by others in stuffy crowds. To what will future citizens turn for relief from the ever increasing pressures of modern life?

A person's recreation should help

to balance his life. If he does inactive, indoor work as many do, then his recreation should be out of doors and active. If he works continuously with others, then he may well spend some of his recreation alone. Nature, and its related activity, hiking, can be adapted to fit a wide variety of personal needs. It can be enjoyed at all seasons. It can be carried out alone or in groups and clubs. It can be entered into leisurely by loitering at the streamside, or strenuously by climbing mountains. A hike in old clothes may cost nothing, or one may deplete any pocketbook through travel and exploration. It may vary intellectually from mild contemplation to the unravelling of the mysteries of the universe. Creativeness with natural materials is unlimited in its possibilities. One's spiritual nature may respond in any degree to the wonders of nature, and there is unsurpassed beauty for the aesthetic sense. Thus each individual may find in nature the combination of activities which will best serve to balance his life and allow expression for his individual desires.

Nature is the very basis for our lives and needs to be better understood. Both individuals and nations suffer in proportion as they disregard nature. Interest in nature often leads to the development of valuable scientific interests, to worthy vocations, or to intelligent efforts along such beneficial lines as the conservation of natural resources.



JACK SEZ

A cold frame often helps us to start our annuals from two to four weeks earlier than if we sowed the seeds directly in a flower bed. A desirable size to build a cold frame is 3' 6" x 6', approximately 6" to 10" above the ground. Make sure that the frame slopes to allow the sunshine in and the rains to run off instead of into your bed. It is usually difficult to obtain manure and it is possible to have a successful cold frame without bottom heat, provided it is covered at night and the seeds planted somewhat later. Be sure that the soil in which the seeds are planted is thoroughly pulverized to give the young plants a fast start. Opening the frame to harden the plants a week before transplanting is a great help.

* * *

A good many of us have failed to prune our shrubs after last season's blooming. Now we find that they have outgrown their position and we are anxious to do heavy trimming so that the plant will again be in bounds. This is not the time to prune and we suggest that you do as little trimming as possible until after the blooming season, as you will otherwise be cutting away most of the new bloom. Many people think that pruning is a mysterious art but if you will follow the two rules—not to trim shrubs till after blooming and not to be afraid of cutting into the old wood (to give the shrub an opportunity to bloom again)—you will find that it is a very simple matter.

Most Mountain Ash trees were unusually full of fruit last year which has caused a great deal of attention being brought on this attractive tree. Many do not know that there is a native mountain ash which grows slowly and will never get large.

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LANDSCAPE CLASSES

Announcement is made of a spring course on landscape planting for Denver homes, offered by Denver University in cooperation with the Colorado Forestry & Horticulture Association. The classes will be held at Horticulture House, 1355 Bannock Street, on Tuesday evenings from 8 until 10 o'clock, commencing April 6 and continuing through June 8.

The class is planned for home owners, amateur gardeners, and others interested in art out-of-doors. In addition to a consideration of the principles of landscape design as applied to the layout of home grounds and gardens, the study will cover plant materials, planting design, and the many practical problems involved in

the development and care of beautiful and distinctive landscape plantings. To supplement the lectures and class discussions, some field trips will be planned.

Instructors for the course will be Irvin J. McCrary, landscape architect, Miss Jane Silverstein, landscape architect, and George W. Kelly, horticulturist. The price for the course of eleven sessions is \$12.00.

QUESTION BOX

We have had several requests lately for such a department. So to help our readers with their garden problems, we will be glad to answer any questions sent to us. Those of general interest, we will publish, with the answers, in *The Green Thumb*.

THE WEEK-END GARDENER

THE "boss" says that the nurseryman delivered those plants I had ordered this morning. I'll change into my garden clothes and plant them out. I must see what they look like before I go in. Yes, they are nice looking plants. I will get the plan I made last fall and see where I had figured to put them.

"Hi, Oldtimer, what is the matter? Sure those are my plants. Yes, I want them to grow. Why surely it can't hurt them to leave them in the sun and wind for an hour or so. You say that some of them are practically dead now. It must have been poor stock that the nurseryman delivered me. What should I do about it now? Do you think that they might still live if I covered them completely with moist soil for a day or two? Thanks, I'll know better next time."

I wonder if the same rule applies to the perennials that I am digging up and dividing. I'd better have the work all planned so that I can get things back into the ground as fast as possible. The Oldtimer tells me that the instinct to know when a plant is being treated right and when it is being abused is one of the things that indicates people with green thumbs.

That was hard work moving all those plants and working over the soil. I'll just wander around and look at things for a while. There are ants running up that bush. I'll bet there are aphids on it somewhere. Sure enough, they are just starting. I'll get out the sprayer and get them before they do any more damage. I'll bet that there are other insects just starting now. I'll look everything over carefully. There is no rest for the gardener when spring once comes and the plants start to grow. It isn't long after the first leaves venture forth that the various bugs begin to eat them. Well, that is part of the fun of gardening—to outsmart the insects and diseases, but it sure takes eternal vigilance.



The Green Thumb

MAY, 1948



ORCHIDS TO ANNA GARREY

This Association and the cause of forestry and horticulture in the state owes a great deal to Mrs. George H. Garrey. For many years she was a member, and part of this time a director, of the original Colorado State Forestry Association and she has been the brains behind much of the recent progress of this association.

Probably her greatest contribution has been her enlisting of just the right persons to fill important positions.

She prefers to keep herself in the background and accomplish her objectives through these selected friends of hers. When no one else is available to do a necessary job, however, she is likely to throw her entire energy for days into doing it. She loves to do the "dishwashing" jobs. Probably the most appropriate title given her by her friends and co-workers is that of "Spark-plug Garrey."

INDOOR PROGRAMS AT HORTICULTURE HOUSE

May 7th, Friday, 7:45 p. m. "The Early Spring Wildflowers," Kodachromes by Harold Roberts.

May 13th, Thursday, 8:00 p. m. Denver Rose Society.

May 14th, Friday, 7:45 p. m. The New Flower Seeds. By a panel of Denver Seedmen.

May 19th, Wednesday, 7:45 p. m. Research Group.

May 21st, Friday, 7:45 p. m. Planting and Care of Lawns. James Haines, Denver Country Club.

May 28, Friday, 7:45 p. m. Arrangements of spring flowers. Mrs. Aileen Fluken.

Denver University Landscape Classes every Tuesday evening at 8:00.

OUTDOOR PROGRAMS

May 1-8. Botanical work trip to southern part of state. Limited.

May 9. Nature trip to Pegmatite Points, conducted by Glenn Gebhardt; 4-8 miles walking distance. Meet at Horticulture House. 8 a. m.

May 23. Census of Colorado Springs Botanical areas. Meet at Horticulture House, 8 a. m. One or two meals out. Back in evening.

May 28 to 31, 4 days. To Wheeler National Monument for botanical collection and photography. Leave 6:30 p. m. May 28. Return Monday evening, May 31.

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Would you like to share this spot with a few appreciative people? People who might know of equally charming spots to show you?

If you will let us know of these places and the particulars as to distance, transportation and best time to go, we will attempt to arrange a trip in our outdoor nature appreciation program. Call Horticulture House or Mrs. Paul Timm, Chairman Outdoors programs.

Williamson's Sapsucker, on Front Cover

Photo, courtesy, Rocky Mt. News



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"The Public Interest"

As editor and horticulturist these are the principles which have governed our every action. We believe in them, and believe that everyone will profit by working together with these aims in mind. One of the most pleasing things about this work is the opportunity to bring together groups of people to work with others toward the achievement of these principles.

If you believe in this you can show your appreciation by talking to your friends and securing more members for the Association, for the success of the organization depends on the number of citizens who get behind it. If each member who approves of these objectives will enlist his friends it will assure progress of the Association's work without the necessity of a few people contributing large sums, or the great expense of membership campaigns.

The future good that the Association can do towards making the state a better place in which to live depends on you—our members.

GEORGE W. KELLY.

The Green Thumb

A Bulletin of the
COLORADO FORESTRY AND HORTICULTURE
ASSOCIATION

Organized in 1884

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MISS ALICE WOOD, Assistant Librarian
MRS. C. A. BARBOUR
Editorial & Advertising Asst.
L. C. SHOEMAKER, Treasurer and Custodian
MRS. STELLA D. HARE, Membership Secretary
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THE WEEK-END GARDENER

THE weather is so nice today that I believe I'll plant some of these seeds I got weeks ago. Even if we do have a little cold weather yet, I'll take a chance on their coming; and if they should be killed a little more seed is inexpensive. For the more important places I think that I will wait a few days and then get plants from the greenhouse. They are not very expensive and will give me bloom weeks earlier.

I paid two dollars for one little shrub yesterday. It seems to me that I could just as well raise my own small plants. I'll ask the Oldtimer if he knows how it is done. "Sure," he says, "you can raise some of your own plants, but many are difficult to propagate and slow to come, so that you would actually spend more time raising a few plants than they would be worth." I guess that maybe the nurseryman earns his money after all. But I remember how my dad used to stick willow limbs in the dirt along the ditch and grew trees. I wonder what the Oldtimer says about that. "Sure," he says, "you can raise willows, poplars and some such things from cuttings; but who wants them after they are raised." He did say, though, that privet and tamarix were easy to start from cuttings, and I do need some of them. He told me that many things were started from seeds, but that all the finer roses, the fruit trees and many other new things were started from grafted plants. He tells me that grafting is a rather particular job, but I'm going to find a book that tells how it is done and see if I can learn to do it. I got a five-in-one apple tree last year, and I'd like to graft on another 5 kinds just for fun. I'll probably never be an expert, but I'll know more about plants, and will be pretty proud if I get a few grafts to take. This kind of grafting is more in my line than the kind they tell me the politicians learn to do.

Another method of propagating shrubs, the Oldtimer tells me, is by layering. I need some more small dogwood plants, so I think that I will hill some dirt up around my old dogwood plant and see if some of the limbs will take root. It is sure interesting to learn the various ways that Nature has developed for plants to propagate themselves.

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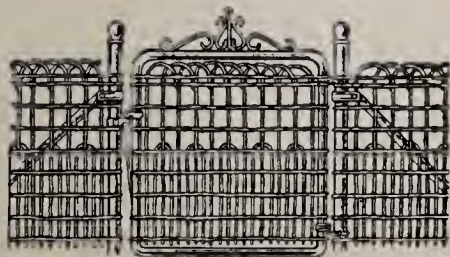
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TREES FOR COLORADO

RECENT concern over the possibility of losing our elm trees because of the Dutch elm disease has focused attention on other good trees which may be planted in place of elm. The Research Group of the Colorado Forestry & Horticulture Association composed of nursery, landscape and tree men of long experience suggests the following list. This list is arranged according to the number of votes that each tree received. Refer to the January 1948 and July 1945 issues of "The Green Thumb" for descriptions of these trees showing their best uses, outstanding character-

istics and disadvantages. No tree is perfect but these are the best species available for use in Colorado. Each should be used in the situation for which it is adapted. The committee invites further suggestions and corrections.

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 Northern Red Oak and
 Pin Oak
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THE DUTCH ELM DISEASE

THE picture on the opposite page was taken by Ed Scanlon, editor of "TREES" magazine. It shows rows of stumps left on a street in Columbus, Ohio, after the trees had been killed by the Dutch Elm disease and phloem necrosis. We do not want Denver streets to look like this. Recently the top experts from the Federal Bureau of Entomology, with heads of various state and city departments, spent a week surveying the situation in Denver and the state. Their conclusions are given below.

1. The bark beetles which spread the disease are rather common over much of the city and the state.

2. The disease has been positively identified in several trees in Denver.

3. It is reasonable to suppose that these large numbers of beetles would soon infect all the American elm trees in Colorado unless measures are taken at once to control their breeding.

These Experts Recommend

1. That all dead or partly dead elm trees, dead limbs in trees, and elm logs in dumps be removed and burned or sprayed with DDT.

2. That special attention be given to the care of American elm trees to increase their vigor to a point where they will not be suitable breeding places for the bark beetles. Emphasis should be on thorough watering, fertilization where needed, and spraying for insect pests, especially the elm scale.

3. That property owners who want to take every precaution to save their trees, secure private tree men to spray their elm with the approved DDT emulsion.

How Can The Beetles and The Disease be Identified?

The Scolytus beetles which carry

the Dutch elm disease are tiny brown insects which may emerge from their breeding places in the elm bark around May first and later. They fly to the nearest elm tree and feed there in the smallest crotches for a few days. Then they fly to the nearest weak or recently dead elm wood and bore into the cambium layer and lay their eggs. If they do not find suitable places near by they may fly for miles or attempt to lay their eggs in vigorous trees. When a tree has a full flow of sap it usually drowns out the beetles. Where the beetles find suitable wood they bore a gallery up the tree laying eggs alternately on each side. These eggs hatch, and the larvae bore out at right angles, giving the typical "double-comb" pattern. These larvae may then bore up into the bark and pupate, emerging at the proper time to fly out and complete the cycle. A tree of low vigor may be killed by the beetles themselves as they girdle the tree with their brood galleries, and the beetles may spread the spores of the disease to healthy trees as they fly out to feed.

When a tree has contracted the disease it may begin to die back from the top, with a few lingering, live sprouts from the trunk, or it might in rare instances throw off the disease. This is a fungus disease which kills the tree by clogging its circulatory system with the fungus growth. The typical sign of the disease is brown discolored rings in the recent growth, though so far these have not been very conspicuous in specimens found in Colorado. It is impossible to say positively from its appearance whether a tree has the Dutch elm disease or not. Specimens of the wood must be sent to the Government laboratories for culture of the fungus and inspection under high-powered microscopes.





Native Thimbleberry.

Photo by Dick Morris

HARDY PLANT MATERIAL FOR HIGH ALTITUDES

MRS. H. E. COMBS, Steamboat Springs, Colo.

IT is a problem to know what to plant in the higher altitudes of Colorado with their short season. Conditions here are such that many things classed as hardy in the nursery catalogs will not thrive, especially among

shrubs and trees. By the process of elimination, however, and after 20 years of experimenting, this writer has found a number of things that do well.

From a planting of trees obtained from the State Agricultural College

we found these that survived: Russian golden willow, Balm of Gilead, Norway poplar, Canadian poplar, Laurel leaf willow, Russian olive, and White ash, the last slower growing than the rest. The silver-leaved poplar lives here and of course we should not forget the possibilities of using the native trees. The Chinese elm is sometimes recommended but our personal experience is that it winter-killed each winter, growing up to brush the next summer. A nice lawn tree is crab apple, which most years will make fruit. One of the best of these is the Dolgo crab, which has very sturdy, upright branches so the heavy snow does not injure it, even when small. The Hopa crab is equally hardy and is a beautiful flowering tree, with its deep rose-colored blossoms in the spring and small brilliant red apples later.

The best way to help a young tree through the first few winters, till it develops a heavier bark and can withstand the climate, is to wrap it in winter with burlap. We also find that things propagated in the rigorous climate of the northern states and Canada are more likely to be successful than things grown in a milder climate.

There are a number of shrubs we found to do well. The Tartarian honeysuckle thrives and has both flowers and berries. These berries form a feast for the birds all fall. The Siberian peashrub grows into a tall hedge. Several viburnums do not winterkill at all and have both spring flowers and later fruits. The Highbush cranberry is one of these. It resembles the snowball which, however, winterkills at our altitude of 6800 ft. Viburnum lentago, or nannyberry, and V. dentatum, or arrowwood are tall shrubs which have beautiful fall foliage. Silverberry is a good small shrub with greyish leaves and inconspicuous yellow blossoms that perfume the whole

neighborhood. Of the Spireas the Billard variety blooms during summer when no frosts interfere. It thickens up from the roots like a perennial and should be divided and replanted after a few years. The dwarf varieties, Anthony Waterer and Callosa, die back like perennials but come up each spring and bloom all summer. Bridalwreath kills back and stray buds usually get frosted but the Korean spirea is a hardier variety that resembles it and blooms later when frosts do not hurt it.

Of course the lilacs are hardy and will usually bloom if planted on the east side of the house or some other protected place. Everyone should have some of the beautiful French hybrids, many of which are double. These come in many shades of lilac called red, pink and blue as well as white and have the advantage of blooming on much younger bushes than the common lilac. It is best to be sure to get French lilacs on their own roots, as the grafted bushes may be on an understock that is not hardy, or an accident to the plant may kill the top so the variety will be lost.

I have used the hybrid Rugosa roses as shrubs or hedge. These grow into good specimen shrubs and have the advantage of blooming from spring until frost, which few shrubs will do. Some are sturdier than others. Among these are Hansa, (red) Belle Poitevine, (deep pink), wild Siberian rugosa, (pink), Sir Thomas Lipton, (white), and Grootendorst, (both red and pink). Others with a more tea rose character are Amelie Gravreaux, (crimson), Dr. Echner, (salmon) and many more to be found in nurseries in the northern states. Among the roses the rugosas are the only ones we have found to be permanent, except the briars, such as Harison yellow, Persian yellow and Austrian copper. The new Brownell sub-zero roses look promising and

should be tried out by high altitude gardeners.

Nearly all perennials listed as hardy will be satisfactory, except some that bloom too late in the fall, such as most of the chrysanthemums. The snow in the high altitudes serves as a mulch so the plant material need not be protected with anything else over winter. In fact, some things may smother under the heavy snow instead of winterkilling. Violas, pansies, columbines and ferns thrive in this climate, as well as other plants that usually like the shade. Fall phlox, delphiniums and others grow to surprising heights and luxuriance.

As a class, the hardy spring bulbs are perhaps the best of all. They seem to be especially suited to this climate, to be acclimated and to multiply very fast. All of the narcissus family thrive, as do the tulips, especially the Darwins, which are most beautiful and most permanent of the tulips. We have found that the daffodils and other narcissus may be left as much as 5 years without dividing and re-planting, and tulips 2 or 3 years. If tulips are left more than this, though, they tend to disappear.

Among the lilies, the Elegans and Umbellatum groups multiply like perennials and bloom in midsummer. The earlier strains of tiger lilies become naturalized. The lovely little Tenu-folium lilies and Regal lilies seem to be medium hardy but last only for a number of years. Perhaps some ever-green branches over the lily bed in winter might not be a bad idea. Of course day lilies live year after year. The blooming season of some of them is a little too early and the buds get nipped. The same is true of iris so it is well to choose later blooming varieties.

Dahlies freeze so easily they are hardly worth the trouble of protect-

ing for each light frost, but gladiolus foliage withstands some frost and they are very worthwhile. However, one should select early varieties that will have time to bloom before fall freezes and also have time to develop good corms for next season's bloom. All in all, there are a lot of lovely things that do well without coddling.



HOW TIME-LAPSE PLANT PHOTOGRAPHY IS DONE

John Nash Ott, who shows his time-lapse plant pictures here June 17th, is much more than a photographer. Although a banker by profession, he is a good gardener and has shown rare ingenuity in the elaborate machinery which he has developed to make possible his remarkable pictures. In his laboratories in the basement of his home at Winnetka, Illinois, which I visited March 19th, he has a dozen movie cameras at work constantly taking pictures at regular intervals of various subjects. Everything is automatic. Every five or ten or twenty minutes bright lights will flash on, natural light is shuttered and the proper camera will click once. The cameras are mounted on tiny tracks and are arranged to move back and point up automatically as a plant grows. He may be photographing the growth of garden peas, or the emergence of the shoots of wild hepatica, or the effects of various treatments on seed corn; the plant growth which takes weeks will be photographed so that it can be shown on the screen in a few seconds.

All lovers of plants or of science will be spellbound by his "Plants in Action" film which he is showing at the Phipps Auditorium June 17.

GEORGE W. KELLY.



Georgetown, Colorado

CHRYSANTHEMUMS THRIVE IN HIGH MOUNTAINS

BENJAMIN DRAPER

Hardy chrysanthemums, developed by Professor E. J. Kraus of the University of Chicago, not only withstand the severe winters of the Windy City but they thrive in the far reaches of Colorado high mountain country where it is just as cold, if somewhat drier.

Experiments carried on for the last two years by Georgetown Enterprises, Inc., in cooperation with the University's botany department, have shown that not only will mums survive Colorado mountain winters but the hardy plants will bloom in the short growing season here.

When planted in good rich soil, aided from time to time with a sprinkling of bone meal, the plants reach maturity every year. The experiments have shown that warm sunny spots are best for planting; avoid shaded places and beds against buildings.

Begun in 1946, the experiments

have included planting in Georgetown, Central City and Silver Plume. The local firm has been conducting similar trial plantings in a good many directions with a view to developing perennials that can be used to advantage by summer cottagers who are not always able to give daily and intensive attention to their gardens.

The interest of The University of Chicago was enlisted by the writer, a Georgetown man, and alumnus of that institution. The hardy plants were first developed by the University as a part of its Woodlawn beautification program. This University community is now noted for its annual fall exhibit of gardens planted with almost every variety and kind of chrysanthemum.

Ninety percent of the plants set out survived last winter, the severest in the mountains in fifty years, having rooted when planted the previous year.

Experiments for this coming summer will include varieties of early blooming gladiolus and several other perennial plants.



Spiderwort.

Photo, courtesy Rocky Mt. News

AN EASILY-GROWN WILDFLOWER

FRANCES BINKLEY.

The gaunt plant of the Spiderwort (*Tradescantia occidentalis*), upright cousin of the Wandering Jew, may seem scarcely worth moving into the garden. But if its long, linear leaves and angular stem are allowed to grow up through other screening plants, the deep blue of the three-petaled flower justifies its place there. The plants are interesting also for the reminder, brought by the name, of John Tradescant, traveller, gardener and director of the horticultural enterprises of Charles I of England. His son collected American wild flowers in Virginia in 1657.

Tradescantias may be transplanted from the fields, or propagated by cuttings. They are said to grow readily from seeds. Once established they flourish cheerfully without any special care. Mine have continued several years on a sunny east slope. *Tradescantia occidentalis* is common in the foothills and plains region. *T. virginiana*, a larger plant, is found farther east. Horticultural varieties have been developed, and are available in colors ranging through pure white, porcelain blue, pink and the mauves and purples.

THE WEEK-END GARDENER

TODAY I see that I will have to get down to my season's routine of garden care. The weeds are coming and threatening to choke out the little seedlings, the grass is growing into the flower borders and the ground on the south of the house is already hard and dry. I'll get the hose started on the dry spot and sharpen up my spade to trim up the lawn edges. The lawn always seems to want to grow better in the places where it is not wanted. The Oldtimer tells me that it may be because there is richer, looser soil in the flower borders than where the grass was planted. He tells me that grass can manage to exist in poor soil, but that it can only grow vigorously in well-prepared rich soil. I saved a few dollars when I put in my lawn, but I expect that it has cost me many times that amount in the last ten years keeping it fertilized so that it would look at all good.

Oh, my aching back, I can't figure out how those beet workers go all day long bent over weeding. I'll never be the same again. Seems like someone should find a way to keep the weeds down without so much hard work.

I'll ask the Oldtimer again. He tells me that many gardeners are trying to duplicate Nature's way by mulching rather than weeding and cultivating so much. He says that the deep cultivation that many people practice will do more harm than good, because of the roots destroyed. I asked him just what good cultivation was anyhow. He told me that the main purpose was to kill competing weeds, and that mulching would do that, as well as keeping the ground cool and moist. He calls mulching the lazy man's way, but it looks to me as though it was nearer Nature's way, and from reports I get it does actually help to raise finer plants, and is much less work. He also tells me that peat, leafmold or, under some conditions, straw, manure or sawdust may be used.

Now, with my lawn mowed, the edges trimmed, the dry spots soaked, and my borders all cultivated or mulched I believe that I can take enough time to sit a few minutes on that new seat and enjoy it all.

KEEP PEACE WITH YOUR SOIL

By V. A. TIEDJENS

Reprinted by Permission from Horticulture

The chemical and physical condition of the soil in your garden will determine the type of root system that your plants will make and the type of root system will determine what flowers and fruit you will get from the tops. If we could view the roots in the ground as well as we can the tops, we would have an answer to why we have the kinds of plants that we do. Few of us are satisfied with our plants. We want show specimens. Our soils

vary widely but we can all grow good plants if we pay attention to details.

There are many things that can affect our plants but, if the soil is not right, we have two strikes against us before we start. Few of us appreciate the importance of the condition of the soil. Directly or indirectly our food comes from plants. If we would approach a "Utopia" we must be kind to our soil. Our soil will make a return exactly in proportion to the way we treat it.

THE COLORADO SPRUCE GALL APHID

BY PAUL N. MORROW

THE Douglas Fir or Spruce Gall Aphid, the little insect that causes the young tips of spruce to swell, turn brown and at a distance have somewhat the appearance of a cone, is one of the most talked about of the insects that attack ornamental plants.

I have never seen either a Spruce or Fir die from these attacks. They can, however, cause serious damage and disfigure the trees by turning the

tips brown; thus killing the terminal bud and directing the expanding growth to lateral buds instead.

The ill effect it has on Firs is much less serious, usually limited to the yellowing of the area where the aphid insert their beaks into the needles. In case of a serious infestation, the whole tree may have a slight yellow cast and lose many needles.

The Douglas Fir Aphid has a very peculiar and interesting life cycle. There are two generations each year, and two forms, the winged and wingless. The winged has two host plants (fir and spruce) between which they alternate. The first generation that hatches in the spring matures both winged and wingless in July. This is the time when the spruce troubles begin. The winged Aphids migrate to the Spruce where they produce the second generation that "over-winters" on the back of the young spruce twigs. This group of aphids will mature in May and produce another crop which establish themselves immediately at the base of the needles on the young spruce twigs and begin sucking the juices from the plant. This sucking causes the pedistal of the needle to swell to such an extent that the needles touch at a point slightly above the twig, forming small pockets at the base of the needles thus providing a place for the Aphid to secrete himself until maturity. This feeding and swelling causes the area affected to die




Fir twigs enlarged several times, showing aphid egg nests in which the aphid that migrated from the spruce to the fir laid their eggs.



Gall caused by spruce gall aphid, swelling to several times the diameter of the new twig and giving somewhat the appearance of cones.







gradually. Hence the brown cone effect. In July this gall dries out and cracks open, releasing the young insects. The young then moult, develop wings and fly away to a *Douglas Fir*, where they lay eggs in white waxy nests. The eggs hatch in from 7 to 10 days into coal black nymphs. They remain on the underside of the *Fir* needles through the winter. In the Spring the females lay eggs which hatch at the time new growth starts on the *Fir*. Winged individuals are produced in this group that migrate back to the *Blue Spruce* thus completing the life cycle of the *Spruce Gall Aphid*. The cycle requires 4 generations, two years time and two host plants.

Control: The *Spruce gall aphid* is not difficult to kill. Almost any contact spray will kill the insect and most ovicidal sprays properly emulsified will prevent the eggs from hatching. The greatest concern in *Spruce Gall* control is in selecting a material of proper dilution that will not injure the plant. Timing the application is important in preventing injury and in getting maximum kills.

Spraying *Spruce* during the months of June and July while the insects are inside the gall is of no value. Fall spraying of the *Spruce* will catch the brood that has just migrated from the fir and established itself to "over-winter" on the young twigs.

The use of oil on *Evergreens* causes greater foliage damage in fall than when applied in early spring before growth starts.

←
Three fir needles greatly enlarged, showing nest from which the young have emerged and established themselves along the underside of needle, where they stay through the winter.

→
Spruce gall cut open, showing enlarged needle bases and pockets in which the aphids secrete themselves until maturity. The dark spots are aphids. The white substance in the pockets is the residue of molts.



A one percent spray oil with nicotine sulphate added at the rate of 1 pint per 100 gallons of water and applied before the growth starts in the spring has given complete control with negligible injury to the foliage.

Two and one-half gallons lime-sulphur to 100 gallons of water, applied just before growth starts has given excellent control without injury to foliage.

These sprays should be applied on evergreens only by experienced operators.

An easier remedy for the home owner to use is nicotine sulphate: 1 ounce to six gallons of water with about 3 ounces of laundry soap. The control obtained from this formula is not as complete as from either the oil, nicotine, or lime-sulphur sprays but is highly satisfactory and much easier to use. Best results are obtained by early spring applications. This formula may be used throughout the season without injury. (Except during high temperatures).



THE WEEK-END GARDENER

I WAS thinking, as I drove home from work today at noon, that this is the time of year that all good gardeners live for—New leaves breaking out, flowers blooming, and everything looking so fresh and new, beginning a new year's growth. I believe that I will take time, after lunch, to just walk around a while and look at the display made by my neighbors' gardens. With so many things to do in my own garden it is hard to take the time, but gardening is for enjoyment after all, and I should take time to get a little of that enjoyment as I go along.

I have seen, in the last hour, a lot of things which I can use in my garden, and I've also seen a number of horrible examples of the things that I should avoid. I wonder if I will remember them? I guess that this is a good time to start that garden calendar and reminder. It seems that when I notice a thing which needs to be done it is never the time to do it—the spring-blooming tulips must be planted in the fall, and the fall-blooming perennials moved in spring.

Some more plants were just delivered by the nurseryman. I'll get them right into the ground, as they are beginning to leaf out. Whoa, there, I dug right into the center of a peony plant that I had forgotten all about. Now my shovel came up with half a tulip bulb. I'm going to stop right now and get a big piece of paper and make a map of my garden. I'll make a resolution to check this map every week and mark the location and name of every plant as it appears. Monday morning I'll go over to the seed store and get some plant labels to mark some of the new plants. I just can't remember all these new names or where I planted things.

That vacant place in the border reminds me that I was going to order a half dozen floribunda roses. I'd better get them at once or it will be too late until next year. I'll dig the holes now and be ready for them. Oops, what is this—bricks and gravel—Now I'll have to wheel it all out and get some good soil someplace to fill the hole. I hope Mom has plenty to eat tonight. I'm hungry as a wolf.

A FAMILY-UTILITY GREENHOUSE

JANET CHAPMAN

I FELL HEIR to a small greenhouse when we purchased a home in Colorado Springs. Not only has it been useful but it has proven to be such a source of pleasure and relaxation that I would not want to live without one. Because mine is an old-timer it is of very sturdy construction. Today it is possible to obtain a small greenhouse in pre-fabricated portions, ready to set up. But for any style I recommend that one wall be attached either to the garage or, better still, to the house itself. I recommend further that it have only two exposures (aside from the roof), preferably south and west. If the north side is blocked solid it aids the heating situation and protects any plants or vines that grow on or near it.

My greenhouse, east side against a tool shed, is about 12x20 feet with a cement walk in the middle and earth-

filled benches, 3 ft. from the ground, 3 ft. wide and 5 inches deep, on three sides. Under the earth for drainage are touching tiles, 4 in. square, held in place by metal strips. In the ground below the benches I grow such things as ivy, myrtle, varieties of violets and other shade-loving plants. Hence it is a double-decker!

The heating system consists of hot water radiators lining the walls below the benches and heated from a gas furnace housed in a separate outside unit. (One great advantage in having a greenhouse attached to the dwelling is that the heat can come from the main furnace.) A thermostat on the inner, east wall is set at 40 degrees, warm enough for normal needs and, if the temperature goes below 35 degrees, because of some accidental failure of the heating plant, a bell in the kitchen

Our Greenhouse in Winter.



rings. There are ventilators in the roof that can be adjusted and on moderate days the door is left open for more air. As a glass house is very vulnerable to hail, as well as to small boys with stones, I have protected the roof with wire netting placed on a frame two inches above the glass.

Many and Diversified Uses

My initial interest was the possibility of freshening up and carrying over house plants and I have acquired quite a reputation for getting a second blooming from azaleas. Another immediate use was to start annuals for the garden and to winter bulbs and other plants from the garden.

Then the ambition seized me to try to have cut flowers throughout the winter. It is very exciting to take nasturtiums to shut-in friends in February; to have strawberry plants in bloom for Christmas presents. From the culinary angle I always have a border of parsley. In the flowers I have had good luck with calendula, snapdragons, stock, mignonette, ranunculus and anemones.

Everyone tends to specialize, so I am developing a camellia collection. They are grown in pots, set in the earth in the benches in winter and in the borders outdoors in the summer-time. They make highly desirable greenhouse denizens as they are both beautiful and easy to care for. It pays dividends to buy big plants as they bloom sooner and more profusely. The present collection of twenty plants has so far this season produced fifty blooms, with more to come. A word of warning—when picking, twist the blossom off at the head. *Do not* cut the stem or branch as that destroys the next year's growth.

In the early summer, because of the intense heat, everything is taken out of the greenhouse except the plants on the lower deck.

Then tomato culture begins. These can bear the strong sun and they are sheltered from wind and hail, two threats to outdoor-grown tomatoes in Colorado. One can get special seeds for greenhouse tomatoes; the plants are started early and spaced when the house is emptied. I prefer the small, gem-like red and yellow varieties as well as the Rutgers and we are never without them from June to October—plenty for eating, pickling and giving away.

Greenhouse Chores

I have tried purposely to restrict my greenhouse activities to a one-person basis and have simplified the care of it as much as possible. A most satisfactory method of insect control, instead of the eternal spraying, is to use a ½-lb. can of Nico-Fume, a pressure fumigator, for this size greenhouse. Follow carefully the directions found on the can, after giving all the plants a thorough watering. In a matter of seconds a tremendous cloud of tobacco smoke fills the greenhouse. As it is poisonous the house should not be entered again for twelve hours. This treatment twice a winter seems to take care of all insect pests. I advise, however, that any visiting plant be carefully inspected before it is admitted!

Watering should be done daily, more or less heavily, according to season and dryness of the air. This chore is really a pleasure for it gives one an opportunity for several deep breaths of moisture-laden air—a rare treat in this dry climate. Get, if you can, a plastic hose. It can be had in a variety of colors. It is amazingly light weight and easy to handle.

Each fall, when it is time to put the plants back in the house and plant the seeds for winter flowers, the earth in the benches should be sifted, tested for deficiencies and the soil, lost by transplanting to the garden, replaced.



Interior of Greenhouse, Showing Camellia Collection.

Further Possibilities

I have told briefly the uses to which I have put my greenhouse to date but there can be as much variation in detail as there are owners and tastes. Sometime I would like to try:

Bulbs — freesias, grape hyacinths, tulips, jonquils, iris.

Cut flowers, in addition to those mentioned — sweet peas, heliotrope, pinks, chrysanthemum, salpiglossis.

Herbs for the kitchen; chives in pots.

Propagation of house plants from cuttings.

Growing unusual plants for Christmas presents — *Pyracantha* (graber), begonias, fuschias, gloxinia, primula and many more.

Every season brings its special fun but I have finally decided that the most stimulating time to work in a greenhouse is in snowy weather; it is so cozy, so warm, so exciting.

SPRING IN THE GARDEN

Primroses fair and daffodils
Laugh up at us. A robin trills
And happy heartsease faces glow;
A kind sun warms the teeming earth
Bringing the myriad seeds to birth;
Soft showers fall, mild breezes blow—
And life is sweet, all gardeners know!

Soon many a weed or ruthless pest
Will tax our muscles, steal our rest,
Or of our plantings get the best.
Some prize will die, another sicken—
But now, while heart and pulses
quicken,

Let's revel in our garden labor
And brag about it to our neighbor!

MAUD McCORMICK.



HORTICULTURAL MEETING

We have secured the Silver Glade room at the Cosmopolitan Hotel for the Rocky Mountain Horticultural Conference to be held February 7 and 8, 1949. We would appreciate suggestions as to the program.

WE DO IT IN LANSING!

CARL FENNER

Assistant City Forester

*Extract from Paper Read at Rocky Mountain Horticultural Conference,
Denver, Colorado, February 3, 1948.*

Editor's Note: Much of the beauty and attractiveness of Denver depends upon the trees with which her streets are lined and her gardens shaded. The balance of nature has been disrupted by the bringing in of large numbers of trees not native here. Now various insects and diseases have discovered that conditions are ideal here for their depredations since the control by their natural predators, found in other states, is lacking. In the last few years especially, many new pests have been discovered working on our shade trees. Some of these have become serious (the Dutch Elm disease for instance) and are likely to do a great deal of damage, or even wipe out an entire species, unless a more suitable system of city tree care is inaugurated. Here are some suggestions from the plan now in use so successfully in Lansing, Michigan. We recommend it for study.

Brief History of the Plan

THE original planners and first residents of our city, as was often the case in those days, were very tree-conscious and planted diligently all the streets of the young town to native varieties of shade trees. It was for the purpose of preserving this wealth of tree growth and to extend the planting of more trees in newly-developed streets that the forestry or tree care department was organized in 1915.

It was reasoned and has proved to be true that the trees could be trimmed, sprayed, repaired, old ones removed and new ones planted in a more uniform manner at lower cost if administered through a municipal department equipped to do such work. Taking into consideration the tree population of the entire city, the average expenditure per tree per year is—\$1.10.

Financing

The funds to cover costs of tree care are appropriated by the City Council through the annual budget of the Park and Cemetery Board. Revenue to supply this budget is collected from taxes on residence property and commercial-industrial property in approximately equal proportion. Considering the small cost to the average home owner (not in excess of

40c per year) it seems reasonable that the actual tree care should be planned primarily from the standpoint of the streets as a *whole* and secondly from the standpoint of the individual owner. This interpretation of the system of a municipally financed and operated department is favorable to uniform results in the tree care program.

The use of funds directly from the city-wide budget offers a distinct advantage over the project assessment system in use in some communities. The project assessment system requires intricate and expensive maps and records of time, equipment and material in each and many separate areas of a city. Under our system this extra overhead work and expense, with the accompanying slow-down of actual work operations, is avoided. We have found that better, quicker, less expensive and more uniform tree service is thus supplied for the interest of the home owner and the beautification of the city as a whole.

Organization

Our City Charter provides for the establishment of a Park and Cemetery Board which consists of one citizen from each of the eight wards. The members are appointed by the Mayor and confirmed by the City Council. They serve without compensation for four-year terms which overlap in such

a manner as to allow the change of not more than two memberships per year. This system assures continuous and long-range planning and operation of the department and a most secure FOUNDATION for uninterrupted progress.

The Board appoints the operating head or superintendent of Park, Cemetery, Forestry and Recreation activities. The superintendent appoints the Assistant City Forester who is in charge of tree care and arboricultural work in the parks and on the streets. It is his duty to plan and manage the work of the forestry department.

Our experience has proved that the work can best be handled by use of four trained foremen who supervise the major activities. By rotating these men from year to year each man becomes familiar with the full scope of the program. The year-round tree worker crews under the foremen are augmented in the summer season by young men chosen for their interest and ability in the work. During the winter season the crews are augmented by regular park and golf course employees who would otherwise be dropped and perhaps lost from the organization.

The major activities are: Service (repairs), pruning, line clearance pruning, planting, care of young trees and tree removal. The service activities consist of the work of repair to injuries due to storms, vehicles, children, animals and miscellaneous agencies, plus the bracing of weakened trees, spraying to control disease and insects and emergency tree removals. In addition to these tasks the Service man, because of his equipment and tree climbing ability, is assigned the work of maintaining outdoor skating rink floodlight systems operated by the parks. He also assists in park and golf course flag pole maintenance. The tree pruning crew trims the trees in

the streets and parks. The line clearance pruning crew trims branches away from electric power lines, when and where such lines interfere with the growth and symmetry of the city's trees. The Planting and care activity section plants the new trees in spring and fall and cares for them throughout the summer months. Another activity, the removal of dead and undesirable trees, is accomplished during the winter season when all the foremen and their crews are free to participate.

Inspection and Consultation Service

The services of the Forester or his assistant are available to residents of the city for inspection of trees, lawns, shrubs and garden plants located either on the street frontage or on private property. No charge is made for this service. The home owner greatly appreciates this expert consultation and we find it to be a most important link in the maintenance of good public relations.

Planting Program

In 1930 the Forestry division inaugurated a city-wide street tree planting program at city expense. Under this program each year a number of streets are supplied with trees without direct cost to the property owners located thereon. The number of trees and streets planted is dependent upon funds available for trees, planting and after-care. At the present date 93% of the city has been planted.

The general plan has been to plant up vacant areas in the older streets first, following with planting on the more improved outlying streets, walked and curbed streets being given preference. The variety chosen depends principally upon the dominant species, if any, already growing on the particular street and upon the width of

parkway or tree belt between walk and curb. Elm, hackberry and sycamore are planted on tree belts 6 ft. or wider. The maples are set on parkways less than 6 ft. wide and the fastigate or upright varieties are planted on very narrow streets where there is not sufficient room for the standard species. Very small varieties such as althea and mountainash are planted in occasional and unavoidable lengthy spaces between standard kinds.

A charge is made, however, for the planting of all trees on streets which have not yet been included in the city-wide program (7% of street areas). The trees are planted at half cost, which at the present time is \$5.50 for a 2 inch size, \$8.00 for a 2½ and 3 inch size. Subdividers of residence property are encouraged to plant their subdivisions by the reductions in cost made possible by large

scale operations.

In the same way the over-all planning and co-ordinated work of the City Forestry Department makes possible other reductions in the cost of tree care to the property owners. As stated above the average expenditure per tree per year is \$1.10.

The planting cost to the city averaged \$12.00 per tree in 1947. The cost of removal of large trees—\$30.00. Cost per tree for pruning—\$3.46, for spraying—\$1.84.

Conditions affecting the municipalities of the North American scene are too diverse to allow the adoption of standard procedures for all localities. The policies and practices outlined here have proved sound for the time being in our own particular city. We offer these ideas in the hope that some of them may be applicable to your problems.



THE WEEK-END GARDENER

THE Oldtimer gave me a book yesterday that tells all about how plants grow, how the sap flows, how the sun changes crude materials into digestible plant food, and how the cells of the plant grow and multiply. It is really a thrilling story. I'm going to borrow his hand lens and look at some of these common leaves and blossoms. He says that it will open up a whole new world to me.

I can understand now why that tree man told me that I should cut those stubs out of my trees. I thought that it would hurt the tree to cut limbs off close, but he showed me how that the only way a wound could heal was to have it cut so that the sap in flowing by could deposit new growth to heal over a cut place. I thought that I was getting a lot for my money when I got an ash hauler to cut a lot of limbs off my tree, but I see now where most of this cutting was unnecessary, and that the wounds left can never properly heal.

After reading the Oldtimer's book I can understand why plants can not do well without sunshine, and why the ground must be kept loose enough to allow some air to penetrate. I can see now why plants die in winter when they have no moisture around their roots and the hot sun shines on them.

My lawn begins to look spotty—bare in places and weeds starting in other places. I'll have to talk to the Oldtimer again. He says that there is no excuse for having a weedy lawn anymore, that the new '2,4-D weed killers will destroy most all broadleaf weeds and will not seriously damage a lawn. I'll try once. He warns me not to let this weed-killing spray drift in the wind as it may seriously damage trees or shrubs.

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12 oz. 35c 2 lbs. 75c 5 lbs. \$1.50

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4 ozs. 65c

Pest-B-Gon DDT Dust

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Ortho Rose Spray Kit—2oz. \$1.00

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THE WORM TURNS

M. ETHEL ASH

THE article, "Contractor's Soil", seems to present a very hopeless situation to many new home builders but this need not be so. With some work and patience and not as much time as one would suppose, the nearly impossible is possible. By raking into the soil, lightly, as much green manure—grass cuttings, leaves, etc.—as can be gotten hold of, by keeping it moist so that it will decay more quickly and by impregnating the ground with a liberal supply of earthworms, nature will in a comparatively short time produce a good layer of top soil. Here are a few facts about this tiller of the soil.

Earthworms are the miracle animals of the world. The great minds of both our time and ancient times have given considerable thought and study to the chemical and mechanical working of the world's most simply constructed laboratory—the digestive system of the lowly earthworm!

The Worm Turns anything within its limited area including garbage, decayed vegetation, animal waste, etc., into the most complete fertilizer. Darwin found that 53,000 earthworms to the acre would produce 120 tons of worm castings—a pure natural fertilizer—in six months time.

In different parts of the country where the soil is very rich, scientists have found 250,000 to 3½ million earthworms to the acre. Soil so densely populated with earthworms can be used indefinitely without wearing out. The valley of the Nile River, a 5,000,000 acre tract, considered the most fertile area in the world has an untold population of earthworms. This garden spot has been continuously and abundantly farmed for over 6,000 years.

The Worm Turns the earth into millions of little tunnels by eating its way through it. Moisture is easily distributed through these tunnels and the ground is aerated without the use of mechanical means.

The Worm Turns the food and soil it eats into rich castings. It will eat its body's weight in 24 hours. It likes a cool, moist soil and this can be provided by using a heavy mulch of leaves, grass cuttings, etc., which is placed between the garden rows and around flowers, shrubs and trees. In a short time, with the aid of friend Earthworm, even the hardest clay soil will become rich, black and crumbly. This almost eliminates hoeing and weeding, thus lessening the chore of gardening and increasing the pleasure.

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HYDROPONICS—ON THE MARCH

MARY K. HELLER

HYDROPONICS is a term which means little to many people who are surprised and delighted to learn that a simple name for it is Soilless Growing. While it is generally believed that this method of chemical cultivation is new in our century, quite the contrary is true, since in 1699 a man named Woodward grew spearmint in water to which he added chemicals! There was some experimentation by French chemists during the nineteenth century but only during the past twenty years has Hydroponics been on the march.

There were two basic reasons for the development of this science: the conviction of growers that larger and better yields could be obtained where all conditions including feeding could be controlled; and the necessity for growing food and flowers in barren and worn out soil areas. Hydroponics is the perfect answer in both cases.

For many years this work was all carried out in laboratories but in 1936 experimentation expanded greatly in the agricultural schools of many states, including Colorado. Because of their generous dissemination of information, it was not long before commercial greenhouses were making large-scale plantings of vegetables and flowers and by 1938 soilless growing became an industry. While sand, cinders and other media for supporting plants were tried, gravel proved most satisfactory and the term "Gravel Culture" is now synonymous with Hydroponics.

The soilless method of planting has many advantages over the soil method: it allows closer planting, thereby conserving space; perfect nutrient conditions may be maintained by the testing of solution and replenishing of used elements; larger yields are produced; there is relative freedom from

diseases carried by decaying matter in soil; the work is clean. While gravel is used in beds where the plants are to grow, it is general practice among soilless gardeners to start their seeds in flats of sand. When the tiny seedlings begin to appear, they are fed the nutrient solution by use of a bulb spray. This method of seed planting is also advantageous for soil gardeners, since there is less root disturbance in removal from sand than from soil in transplanting.

In some sections the soil is very fertile and it seems that anything grows well and produces heavily with little fertilization. In others, however, quite the reverse is true; in some the soil is worn out and in others there is no virgin fertility but only sand and gravel. It can be readily seen that in such situations there could be no growing of food for the populace were it not for Hydroponics. Solutions which are effective in greenhouses are being successfully used by growers who have poor, sandy soil and are beneficial to good soil. When Pan American Airways began to use Wake Island as a refueling station in 1938, it was necessary to maintain a staff there. By the time the clippers reached Wake, they needed not only fuel but food supplies. Since there was neither space nor soil for planting food on the tiny coral atoll, the problem was solved by the planting of a gravel culture bench of one hundred square feet in which was raised sufficient food for the residents of Wake, the crews and passengers of the clipper ships.

To the amateur one of the greatest benefits to be derived from all the work in soilless growing is an increased and more accurate knowledge of how to grow successfully in soil.

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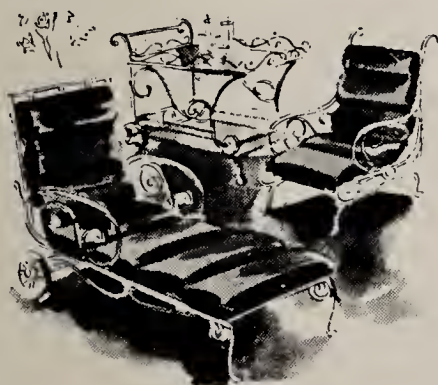
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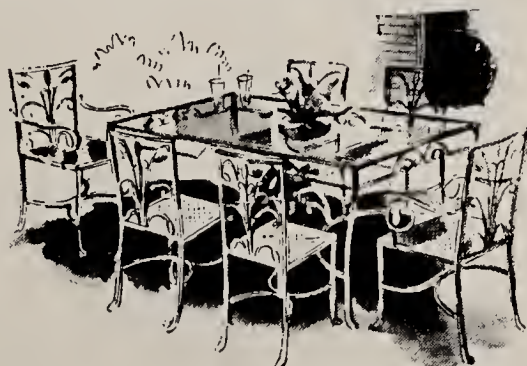
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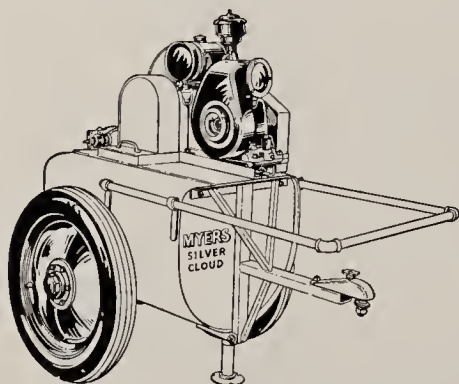
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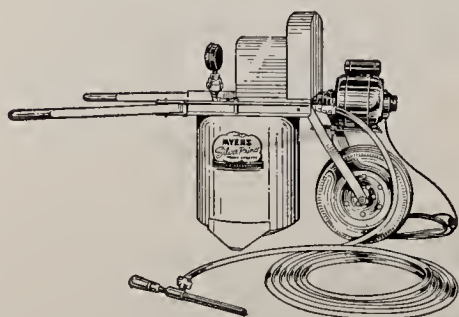
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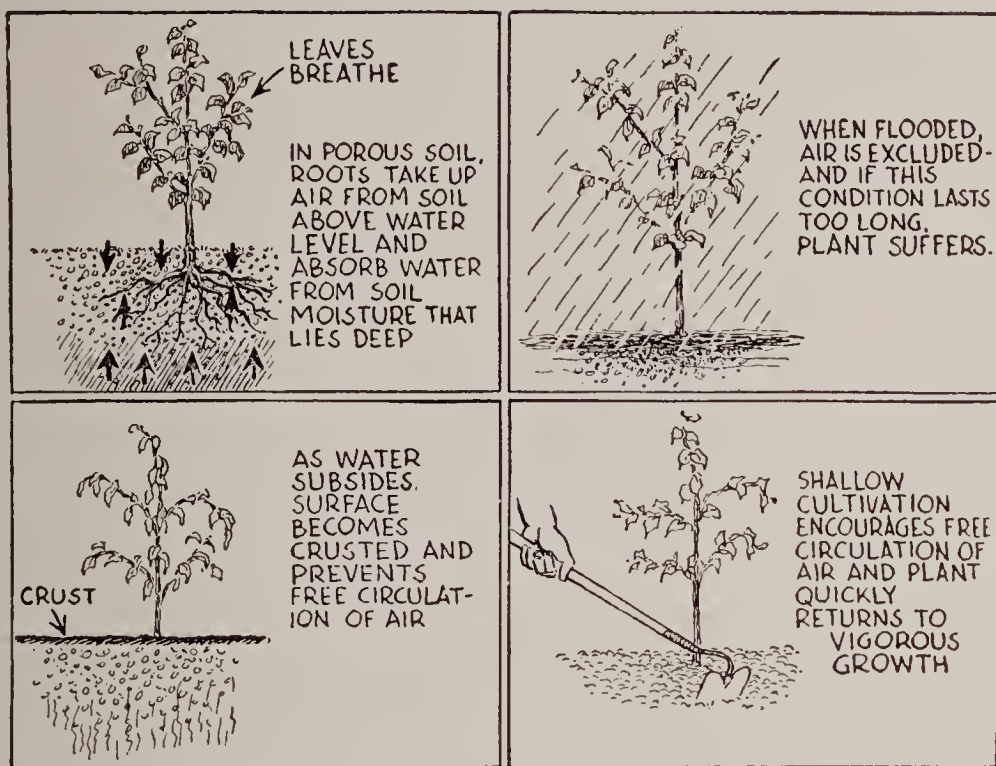
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Air In Soil Is Vital As Water, To Plant Roots



Keep garden soil porous, and break up surface crust, to favor free entry of fresh air.

IMPORTANCE of fresh air to garden plant roots has been stressed by recent scientific studies, which have proved that in porous soil the air down to a depth of eight inches is completely changed once every hour.

Both the leaves and roots of land plants breathe. When the soil in which they grow is flooded, air is excluded, and when this condition lasts too long the plant can drown, as surely as, though more slowly than, an animal which sinks under water.

As water sinks down and drains off, air reenters the porous soil, provided the surface of the soil allows free passage. But when the surface is compacted, as a result of wetting, baking in the sun or other causes, circulation of the air is checked, and the plants will suffer.

To loosen a compact or crusted surface and restore the free exchange of air is a chief purpose of cultivation.

The destruction of weeds is another. The former theory that cultivation is necessary to create a "dust mulch" on the soil to check evaporation of soil water is no longer widely held.

Experiments have definitely disposed of the old time theory that the deeper soil is cultivated the better, however. It seems to be established that an inch, or two inches at the most, is as deep as the hoe should go down. Stirring any deeper, particularly close to plants, may disturb the roots of growing plants and do more harm than good.

Mulches over the soil will serve the same purpose as cultivation, by preventing crust formation, and keeping fresh air in the soil. Good drainage is also stressed by the studies in aeration. Unless water runs off quickly, after a flooding rain, lack of air will injure and perhaps destroy the plants.



The Green Thumb

JUNE, 1948



ORCHIDS TO MR. S. R. De BOER

Philosopher and community planner, Mr. S. R. De Boer has brought to this City and State the heritage of his splendid training, his broad vision and his unselfish devotion to an ideal of service.

A visit to his office—and we see the City of the future grow nobly before us, its free-ways for the pulse of traffic, its integration of parks and industries, its unique plantations of native and imported specimens.

Then suddenly we realize that many of these charts and maps before us have become realities, that he who made them walks daily through the city of his dreams. He has lived to see the fruits of his labors in the flash of the blossoming crabs on Cherry Creek against the dark background of great evergreens grown so tall over the brief years; in the recreation of a lovely old Virginia garden in one of the city's parks; in the arteries of traffic, the boulevards and playgrounds which have taken form under his hand.

As a member of Denver's original Forestry Group, as a Director of our present Society, still one dream remains to be fulfilled by S. R. De Boer — the Botanic Garden he first saw the need of so many years ago, with its research laboratories, its experimental plantings and its acres looking West to the great Range.

Probably no other person has had so great an influence on the horticulture of the Rocky Mountain area.

ROSE SHOW

The Denver Rose Society announces that they will hold a rose show June 28 at the Garden Center. Members of all garden clubs or similar organizations are invited to view this display, from 2 to 9 P.M.

JUNE SCHEDULE

June 6—The Colorado Mountain Club's annual tree planting day. Meet 7 A.M. at Denver Public Library. Register with the C.M.C., TA 0677.

June 12-13—Overnite trip to Bluebird Lake to see birds and wildflowers. Leave Horticulture House at 4 P.M., Friday. Bring sleeping bag for overnite at Wild Basin Camp.

June 17—Colored motion pictures of "Plants in Action" by John Nash Ott. Shown at Phipps Auditorium, City Park, 8 P.M. Admission \$1.00.

June 20—Trip to Deer Park Creek, led by Moras Shubert. Leave Horticulture House at 8 A.M. Bring lunch and rain jacket.

June 27—Bus trip around Denver Parks. Leave Horticulture House at 2 P.M.

Call Horticulture House a few days in advance so arrangements can be made for transportation, and further instructions can be given.

No Friday evening meetings in June.

THE FIRST EXPLORATION TRIP FOR 1948

Four enthusiastic botanists spent four days collecting herbarium specimens and exploring in the southeast part of the state May 2-6. About 120 specimens were collected, some of them rare. The suggested location of a state park south of La Junta was scouted. The date was a little early to expect to find a great variety of plants in bloom, but some of those found might not have been available a few weeks later.

*Cover Picture of Pikes Peak Across Park,
Colorado Springs*

Photo by Harry L. Standley

SPRAYING IS NOT A SIMPLE OPERATION



It is a highly technical operation requiring a knowledge of plant diseases, insects and insecticides. Each pest, each plant and each season requires a specific type of treatment.

Many pests are attacking the trees of Denver which can be controlled by the proper sprays properly applied.

We have a new spray machine which we believe to be capable of applying spray material properly to any tree in the city or surrounding country.

We have had wide experience in handling spray materials.

Call us for advice. We will tell you if your trees do not need spraying, and will advise you what treatment is best if they are attacked with any disease or insect.

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SEE PLANTS GROW

WATCH the tiny sprout emerge from the seed, the leaves expand, the buds appear, the flowers open and the seeds ripen; all in the space of a few minutes. You may see these things and many more of the wonders of growing plants when John Nash Ott shows his remarkable picture "Plants in Action" at the Phipps Auditorium, June 17th.

Mr. Nash has spent many years working out the elaborate mechanical equipment which makes possible these spectacular pictures. We are fortunate in securing him to show these pictures in connection with the annual picnic of the Association.

The plant growth that we see on the screen in a few minutes may have taken all summer to film. There may have been one picture taken every twenty minutes during daylight hours over a period of many months. This system of plant photography is a unique development of Mr. Nash's and so far as we know has not been done anywhere else in the world.

The main showing will be held at 8 p.m. Tickets may be secured from the committee or at Horticulture House for \$1.00. This admission price will pay Mr. Nash's expenses,



John Nash Ott, Jr.

for the use of the hall, the cost of the free showing to children in the afternoon, and (we hope) give the association a sizeable surplus to help in promoting future activities.

GET YOUR TICKETS NOW

Members should secure their tickets from Horticulture House at once if they do not want to be disappointed.

PLANTS IN ACTION

By John Nash Ott

Phipps Auditorium, in City Park, June 17, 8 P.M.

ANNUAL PICNIC OF THE ASSOCIATION

6 P.M. IN CITY PARK, WEST OF THE MUSEUM

(Indoors if bad weather)

Everyone Bring Their Picnic Supper Coffee Served Free
Free Showing of the Picture for Children
at 3 P.M. the Same Day

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TWO LONG-BLOOMING PERENNIALS

For a brilliant bit of border bloom during July and well into the autumn, try putting Phlox Snowcap and Penstemon Cherry Glow together. Since the penstemon is rather a rank grower and inclined to sprawl, support it on each side by the more compact and sturdy phlox. Both plants bloom freely and over a long period if they are not allowed to go to seed. The penstemon, in fact, will not stop putting forth its ripe-cherry-hued flowers until frost.

If the color-combination seems a bit too primitive for some gardeners, perhaps they will recall how ripe cherries gleam among their own green leaves and consider that the glossy leaves of the penstemons will also tone down what might otherwise be mildly barbaric in effect.

"Snowcap" was originated by the late Darwin Andrews of Boulder. "Cherry Glow" penstemon comes from Switzerland and requires some protection in our gardens, but its wealth of glowing bloom when there is a dearth of other perennials makes it worth a very special effort.

MAUD McCORMICK.

The Green Thumb

A Bulletin of the
COLORADO FORESTRY AND HORTICULTURE
ASSOCIATION
Organized in 1884

GEORGE W. KELLY, Editor

MISS ALICE WOOD, Assistant Librarian

L. C. SHOEMAKER, Treasurer and Custodian
1355 Bannock St., Denver 4, Colorado
Phone TAbor 3410

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

Published Monthly.

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Horticulture Association

Vol. 5	June, 1948	No. 6
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COLORADO NEEDS A NATURE PROGRAM

By PAUL W. NESBIT and GEORGE W. KELLY

THE stage has been set in Colorado. "It is a natural." Our mountains form an intriguing, ever-present back-drop and furnish many of the needed properties. We, the actors on the stage, may make use of these props for absorbing activities; trails for hiking and riding, streams and lakes for fishing, peaks for climbing, snowy slopes for skiing, soil and sun for gardening, beauty spots for picture taking and wilderness for camping.

We in Colorado have an unsurpassed combination of the raw materials from which to develop the finest outdoor recreation pursuits. Rugged peaks and quiet meadows; rounded hills and waterfalls; forested slopes and fascinating wildlife; fertile valleys and rippling water; warm sun and cool air are all combined here one way and there another with infinite and untiring variety with over all a delightful sky and invigorating climate bolstered by the effects of high altitude. These unusual properties are to our great advantage. From them we may build satisfying and wholesome activities which we may delight in sharing with others, but we must carefully guard them from spoilage. We of Colorado need to develop a greater appreciation of our

mountains and their advantages.

Appreciative visitors are good for us and good for our business. Visitors who really find these varied and delightful interests will want to come again and to stay longer. Our visitors would be more interested in our mountains if our own residents with whom they come in contact had more appreciation themselves. All of this would result in better use and care of our natural resources as well as in improved human values.

With growing interest and ease of travel, regions where Nature can best be appreciated should draw increasing numbers of visitors from among those who tire of artificial city life. Colorado is well situated to draw from a large, well populated area where there is too much summer heat and humidity and too few natural features of interest. Being host to so many visitors, we need to make our home grounds, our cities and our whole state more attractive to them.

Colorado can better take advantage of this situation if it is better able to interpret its mountains both to those who are already interested in Nature and also to those who are quite unaware of the benefits to be derived from anything outside of four walls. Some of our summer visitors who

come from the plain surroundings of the plains long for our mountains between seasons and return year after year with greater appreciation than most Coloradoans. Others are new in a strange land and vaguely regard our mountains as beautiful but turn for their amusement to the same old pursuits and gadgets of city life.

Nature appreciation group



It is mountains which bring them but Main Street gets their attention and, since our Main Street is not so different from theirs at home, they have little to tell about which will enthuse their neighbor. *We need to capitalize on our mountains for that is the feature in which we are supreme and outclass our neighbors.* Other visitors rush about to make the drives and get on to another region. They probably live a sedentary life of nervous tension at home and get the same sort of vacation. They need to get out on the trails and pump fresh blood through their livers instead of going home with their vital organs all stagnated behind a driver's wheel, just as it is cramped as they sit in the office. They all need to be educated as to what to do while they are here. Furthermore, even though they can not climb mountains at home, they may be able to get ideas for doing some good exhilarating outdoor gardening when they get back.

The desired appreciation of mountains is based largely upon experiences in them and understanding of them. Experiences come from doing different things in the mountains and one who appreciates them is continually searching out new undertakings from among the unlimited possibilities. One gains knowledge, and even inspiration from his experiences and also may gain it from others, especially from good leaders and from writers. If we see that our residents have more understanding and experiences concerning our mountains, then they will become helpful boosters.

The development of greater appreciation of our mountains is worthy of the effort of a special program. This may be called a "Nature Pro-

gram," the term Nature being broad enough to include all that may be desired. A Nature program is not of necessity confined to birds and bugs and flowers but may include the whole outdoors—as big as the mountains and all of the things that go with them. It should be broad enough so that everyone may find in it something to interest him.

With regard to the development of a Nature program, Colorado is behind many other states where there is much, much less of natural interest to be found. It is probably still true that we are the only state without state parks. Some have many parks and roadside park systems which adequately provide for the needs of their residents and their visitors and have suitably marked points of especial scenic, historical, geological or botanic interest. Some states and several cities provide free nature guide service. Many communities have inaugurated valuable programs of Nature appreciation in all grades of their schools.

To some extent a Nature program is one of the objectives of groups within the state such as schools, certain tourist businesses, sportsmen's organizations and state or federal agencies. Since emphasis on Nature, however, is secondary in all these groups

Playing in the Rockies





Crater Lake—White River National Forest

Photo by John B. Schutte

the program needs a unifying and coordinating influence.

A Nature program for Colorado should include a survey of the interested people, organizations and leaders; what they have done or planned to do. There should be an organization to coordinate Nature efforts and use the available information and facilities. An effort should be made to secure the cooperation of the newspapers, museums, city and national parks and other facilities already set up. School authorities might be induced to give more local Nature study and arrange more field trips, outdoor work and summer recreation programs having to do with Nature. Pupil health is an important outcome of more outdoor work. Not only does youth need Nature but the seeds sown during these impressionable years will bear much fruit later. Organizations such as Boy and Girl Scouts, Campfire Girls and vari-

ous religious groups should be given more encouragement and technical assistance in their hiking, camping and Nature study programs. Resorts and tours should be encouraged to develop more activities leading to a variety of mountain experiences.

In order to have schools, camps and resorts take part in a Nature program, there must be made easily available, in accurate and simple style, literature and visual aids which will serve to interpret our Nature and our mountains and which will arouse interest in conserving our national resources. Our state department of education and other state agencies might do more along this line. In order to have teachers, recreation leaders and tourist guides who can interpret Nature, we need a training program for leaders. Our teacher training colleges need to develop more courses dealing with elementary Nature study and Nature

recreation. Summer camp and courses are particularly valuable for this.

A development of greater appreciation for our natural resources will pay dividends in many ways. Colorado may well top the nation some day in outdoor recreation. The stage is set. We Nature enthusiasts must act.

WE NEED HELP

Do you know of some one who would like to help us at Horticulture House for part or full time? An interest in horticulture, ability to use a typewriter, a desire to help people who phone or visit the house and a little ability to do clerical work would help. A small amount for salary is available.

DIRGE BECOMES DANCE

The daylight darkens into night,
The wind blows fresh and cold;
Earth's joys elude our dimming sight,
And we are old.

Our youth becomes a faded dream
That mocks across the years;
Tomorrow is a thinning gleam
That tells new fears.

Our old-time visions lie about,
The rags of dreams that were;
Life's altar is a shrine without
A worshipper.

There are no further goals for us,
Who now are weak and faint;
We mark the sexton's holes for us
Without complaint. . . .

O, come, dismiss the graveyard muse;
Life's still a corking show!
It's spring; put on your hiking shoes,
Let's go!

HILLERY HECHT

Contributed by Anton Senekowitch.

GARDENING FOR THE BLIND

Agriculture as a vocation is a strong contender for one of the most appealing occupations for the blind. For some time reports have been received of blind and visually handicapped people who have made a success of farming. Many tools and implements have been designed and developed to help them overcome their handicap.

Schools for the blind, as early as 1908, started giving pupils instruction in gardening. They taught the cultivation of flowers as well as vegetables and many blind people have had much satisfaction in continuing this pursuit. There is a story of a blind man who planted a garden and did a nice job of it too, but his rows of turnips were pretty crooked. When chided about it he straightened up from his weeding and said, "you can get more turnips in a crooked row." He was not discouraged.

With the new gardening tools perfected by Professor Hugh Findlay of Columbia University around 1944, however, there is not much chance of planting a "crooked row." These tools are the same as used by sighted gardeners with simple devices attached to them.

The hoe and rake have a snap welded to them much like that used to snap a leash to a dog collar. This can be snapped on a wire stretched between the rows, enabling the gardener to cultivate or hoe a straight row; this device can be attached to a five-pronged cultivator as well. There is a depth gauge made for the hoe or spade which is helpful in making rows for the small seeds. With this gauge you decide how deep you are going to plant your seed — set the gauge on the hoe and you can't dig deeper.



THE TULIP

LESLIE F. PAULL

ALTHOUGH botanists have described more than 100 wild species of tulips, the origins of our garden varieties are unknown. The wild species are distributed among more than two dozen countries of three continents. Roughly speaking, two thirds are found in Asia to one third in Europe, with a small allowance out for five species found in northern Africa.

A more detailed study of distribution reveals or suggests some interesting matters pertaining not only to the origin of garden forms but their habits as well. Plotted upon a map of the world the area of distribution of the wild species would show the vague figure of a widely extended mouth, open on one side—the Mediterranean Sea; badly swollen on the other—Western Asia. It is upturned in the west to allow for England's one species. The lower lip—Africa—is very thin; the upper lip—Spain, Portugal, Southern France, Italy, Greece and Turkey—rather thick. In Asia it actually has the mumps! Asia Minor and the countries of the Levant boast 24 species, with 36 more centered in Turkestan, Bokhara and Persia. All of these regions seem to be hot countries, yet we know that in our relatively mild Southern States tulips are a failure. I have not available the data to show in most cases the ecological conditions under which the species thrive. In a few instances, however, we get some inkling—such as in the Swiss Alps, Himalayan Mountains and Daghestan Highlands. It seems likely that in these cases they are plants of mountains and highlands, receiving ample moisture during their growing period and living (from other references) in poor soils.

The Western world paid little attention to its wild species but the Arabs and the Saracens and possibly

the Persians in the early centuries did plenty with theirs. We have no actual proof, as they preserved no records, but we do know from their poetry and other writings that they were flower lovers—the gardeners of western Asia. They must have been at work on the improvement of the tulip for untold generations before it appeared on the European scene. Not until 1554 was the Western world made aware of these developments. The Austrian ambassador to Turkey then observed many varieties growing in the gardens of Constantinople, yet we do not even know when and where the Turks got their start. Returning to Vienna, the ambassador brought bulbs of choice varieties and others were secured later. In almost no time at all their culture spread over western Europe.

The arts of printing and engraving were turning their attention from making religious books to making herbals devoted to the art, if not the science, of medicine. In many of these are crude engravings of the tulips of the period. It is of interest that in all the varieties illustrated there are none with rounded sepals. It remained for the Dutch to develop these at a later period. We still preserve a few of the type with pointed and reflexed sepals in the Lily group.

It didn't take long to discover that the ideal conditions for growing tulips existed in Holland, Belgium and Northern France; also somewhat later in England. These countries still remain the greatest source of supply. Only in our Pacific Northwest are there comparable conditions. In the Low Countries tulip production speedily became "big business". New variety succeeded new variety. Prices soared and speculators made fortunes without ever owning a bulb—also lost them as easily. This "boom and bust"

craze endured from 1634 to 1638. Once over, a few Dutch and Flemish growers settled down to the more serious business of quantity production and even more to the improvement of the existing varieties.

Little was known of artificial hybridization; dependence was upon natural variation and selection according to certain standards that they themselves set up. These standards, however, varied in the different regions. The Dutch ideal became a globular flower with rounded sepals and in solid color. They also worked for longer stems and a later blooming season. Eventually this was to become the Darwin type although it was in the process of development nearly two centuries before Darwin was born.

Meanwhile some growers, especially the Flemish, were utilizing the discards of the "standard" growers. They broke away chiefly in the matter of pure colors in favor of bronze and mixed colors, thus becoming responsible for the Breeder type. They preserved the freaks that the big growers scorned; thus the striped forms and the Parrots came into being. During the same period the early, lily types had become popular in England. They became cheap, plentiful, and, freely purchased by the middle classes, they were soon a feature of the small home gardens in town and country. English gardeners began to work on their improvement but with very different ideals. They preferred a long, slender flower and lighter colors—yellow, lavender and white. They also wanted them taller and later blooming. Thus was developed the Cottage type, so named because of its association with the little homes of England.

With all these types achieved we came to have an April-flowering group of the older types and a May-flower-

ing group of the improved varieties, with a gap between. Since the turn of this century, with great advances made in the science as well as the art of breeding, it has not been difficult to fill this gap but in turn this has tended to obscure type distinctions. It still seems desirable to point out the paths along which development has travelled.

Types

1. DARWIN. May-flowering: very tall: form globular with rounded sepals: colors solid, more often dark than light, (a few in white and yellow). a) Ideal, a sub-type with larger flowers, longer stems and less typical colors.

2. BREEDER. May-flowering: very tall: form globular with rounded sepals: colors modified with bronze tones or overlaid with heavy bloom.

3. COTTAGE. May-flowering: tall: form elongated or oval: tips of sepals various: color more often in tints than in shades, (white and yellow very common). a) Lily-flowered, a sub-type, with tips of sepals always pointed and more or less reflexed.

4. SINGLE EARLY. April-flowering: short stemmed: form short-oval to globular: colors various. a) Double Early: differs only in its many and crowded sepals.

5. TRIUMPH, Inc. MENDEL. Hybrids between Single Early and Darwin types: season intermediate: form from globular to funnel-formed: many varieties have sepals edged with strongly contrasting color.

6. DOUBLE LATE. Sometimes doubled from Darwin, sometimes from Triumph type, possibly a few from Cottage type: seldom any taller than Triumphs: colors various.

Special Types

1. PARROT— Probably bulb-sports from various types. Flowers excep-

tionally large, the sepals deeply and irregularly cut. In the older varieties the flower was too heavy for the stem but this has been improved. Height medium: colors contrasting with usually considerable green on the exterior. Bud, before opening, resembles parrot's head.

2. FIMBRIATE. Darwin derivative. Only one variety—Sundew. Sepals bordered by a dense growth of thread-like appendages: relatively short stemmed.

3. MULTIFLOWERED. Several wild species have more than one flower to the stem. I have no confirmation but suggest that this type may have developed from crossing Cottage or Single Early with one of the wild species. The type has regularly 3 to 6 blooms.

4. BROKEN OR STRIPED. Three type names have been given according to the ground colors and the derivation: Darwins "break" into Rembrandts: Breeders into Bybloemens with white ground and Bizarres with yellow ground. In spite of the fact that these brought the most fabulous prices during the Tulipomania period in Holland, they are passing out of favor. The gaudy splashes, stripes and feathers of different colors make them out of place among other types.

5. WILD SPECIES. Only relatively few are offered to the trade and most of these are rock garden desiderata. The cream of these, out of about a dozen I have grown, are: The Waterlilly, *T. kaufmanniana*. The English Tulip, *T. sylvestris*. The Candystick, *T. clusiana*.

Editor's Note: This unusual article is so long that it is impossible to use it complete in one number of the magazine. So we are reserving the portion concerned with tulip culture, planting, etc. for the October or November issue.

THE WEEK-END GARDENER

LAST week all my trees and shrubs were leafing out fine and there seemed to be nothing to prevent their growing along indefinitely with no care. As I got out of the car this noon I saw that there were aphids on my dogwood and the weeds in the perennial bed were almost covering the ground. I guess that it is time to roll up my sleeves and go to work. I should remember from last year that it will be ten times the work to get rid of the weeds in a few weeks time. When they are small it is easy, but later they get well established and it is really work to get them all out. I wonder if there is not some easier way to get rid of them than by hoeing. I am going to try a heavy mulch on part of the garden, and I think that I will experiment cautiously with 2,4-D where the weeds are out by themselves. The Oldtimer tells me that 2,4-D can cause a lot of damage to other plants if the wind blows it around.

I am going to get my spray gun and kill those aphids on the dogwood before I stop to eat lunch. I don't believe that I got all of them, as the leaves were already rolled around to protect them. The Oldtimer says that the time to fight them is in the late fall just as the leaves are about to fall. Then they are in the open and easy to hit.

My neighbor told me today that all her fine variety of gladiolus had turned out to be of a small sickly pink variety. I don't see how they can do that. I'll ask the Oldtimer. He says that what has happened is that many of the finer "glads" have not produced new bulbs and bulblets, and that the older varieties with more natural vigor have produced a great number, so that within a few years they appear to have "gone back" to the smaller and hardier varieties. Many of these "impossible" things can be readily explained when more is known about how plants grow.

FRAGRANT PLANTS

This list is not intended to be complete either as to varieties or nomenclature of those mentioned. It is merely suggestive and anyone who cares to may make many additions about which we would be glad to hear.

EVERGREENS: Balsam Fir, Pinyon Pine, Rocky Mountain Juniper, other evergreens to varying extent.

TREES: Balsam Poplar (buds), Walnut leaves, Linden flowers, Russian olive flowers, Wild crabs (especially *Malus coronaria*).

SHRUBS: Mountain spray (*Holodiscus*), Hoptree (*Ptelea*), Skunkbush Sumac (*Rhus trilobata*), Sweetbriar Roses (*Rosa rubignosa*), Flowering Quince (fruit).

HERBS: Thyme, Lavender, Rosemary, Germander, Sweet Marjoram, *Artemisia* (sage), many mints, Catnip (*Nepeta mussini*), *Achillea*, Tansy. Also fragrant leaved flowers such as Marigold, *Allium*, *Chrysanthemum*.

FLOWERS: *Nicotiana*, *Abronia*, Clove Pinks, some Iris, Bergamot, Mignonette. Common flowers such as roses, violets, nasturtiums and sweet peas.

FLOWERING SHRUBS: Roses, Lilacs, some Mockoranges, Autumn Clematis, Hall's Honeysuckle, Flowering Currant, Elderberry.

Read Louise Beebe Wilder's book, "THE FRAGRANT PATH." Half of the things recommended will not grow here but many odd things are suggested which it might be worth while to try.

ESPALIERED TREES, SHRUBS AND VINES

JESSIE M. NEVILLS

IF you need something new in the garden, try the ancient art of espaliering. "Espalier" is a French word meaning trellis. Espaliering has been practiced in Europe for many years. It was popularized in America at the World's Fair in New York.

Where space in the garden is a factor, an espaliered tree is the answer. It casts very little shadow, has a very small root system, therefore gardening can be done successfully up to the trunk. From an espaliered fruit tree the fruit is more delicious because it is exposed to the sun and is larger by virtue of the constant trimming of the tree.

Fruit trees that can be espaliered must be grafted onto a dwarf root stock and are higher in price than other fruit trees. The older the tree and the more trained arms, the higher the price. They are a bit difficult to find for Colorado as we are quarantined against fruit trees from many eastern states. I found a nursery in Washington state which can supply apple, pear, sweet cherry, peach, plum

and prune. I chose an apple and a plum, thinking they would be more hardy than the others. There are some espaliered pear trees, near Denver, on the east side of a wall, which have been there many years. Apricots and nectarines are offered by some eastern nurseries; they could be used on the Western slope in the peach country.

Trees may be trained against a wall, although a wire frame should be used to keep the tree a few inches away from the wall to insure circulation of air; the tree should be at least six inches from the wall. The horizontal wires should be placed ten inches apart and the arms, or branches ten inches apart on the trunk of the tree. Fasten the branches to the cross wires. I believe that the warmth of a south wall would bring out the buds too early in our hot spring sunshine; another exposure would be better.

My trees came in excellent shape, fastened firmly to a frame. The grower had attached a note asking me to let him know in what condition the trees arrived as Colorado was the furthest point to which he had ever shipped them. The apple was a trained six-year-old tree, about six feet high and in three fold U form. I am training it into a four fold. The plum lost a branch or two the first winter but I am training branches to take their place. I have not been able, however, to make my turns as nearly a forty-five degree angle as the nursery trained branches.

A young gardener would enjoy buying younger trees and training the branches from the beginning. If you start with a "whip" you must decide

*Formal espalier work at home of
Dr. and Mrs. James Waring*



how wide a spread you want as the two outside lowest branches are grown first. Ten inches higher on the trunk allow two more branches, or arms, to grow. Another ten inches up the trunk allow two more to grow and so on until you have the desired number of arms. If you should find a fruit bud at the end of an arm before the desired length has been reached, nip off the bud and the branch will continue to grow. To keep an even balance, prune the branches on either side to the same length. It takes zeal and constant watching in July, August and September when you do your pruning to cut back all shoots four inches long to two and one-half inches. When the tops are as tall as you wish they should be cut to three buds of each year's growth.

I have used my espaliered fruit trees as a screen between two lots. There is an eighteen inch wall; seven-foot iron pipe posts, drilled by holes every ten inches, and set at intervals. The horizontal wires are stretched through the holes.

The posts and wires, without the wall, are very effective on the side of a building. They can also be used to frame a summer house, or a large window.

As the root system of espaliered trees is very small and as they are usually placed near a wall they will need frequent watering in Colorado. They like best a slightly acid soil so it is well to work in two tablespoons of sulphur every year. Add a pit of peat moss when setting out the tree but fertilize only moderately as you do not wish to encourage too vigorous growth.

Other shrubs and vines can be trained on trellis or wall and trimmed to the pattern of the espalier. They are not grafted to dwarf stock but used as is. Grape, firethorn, flower-

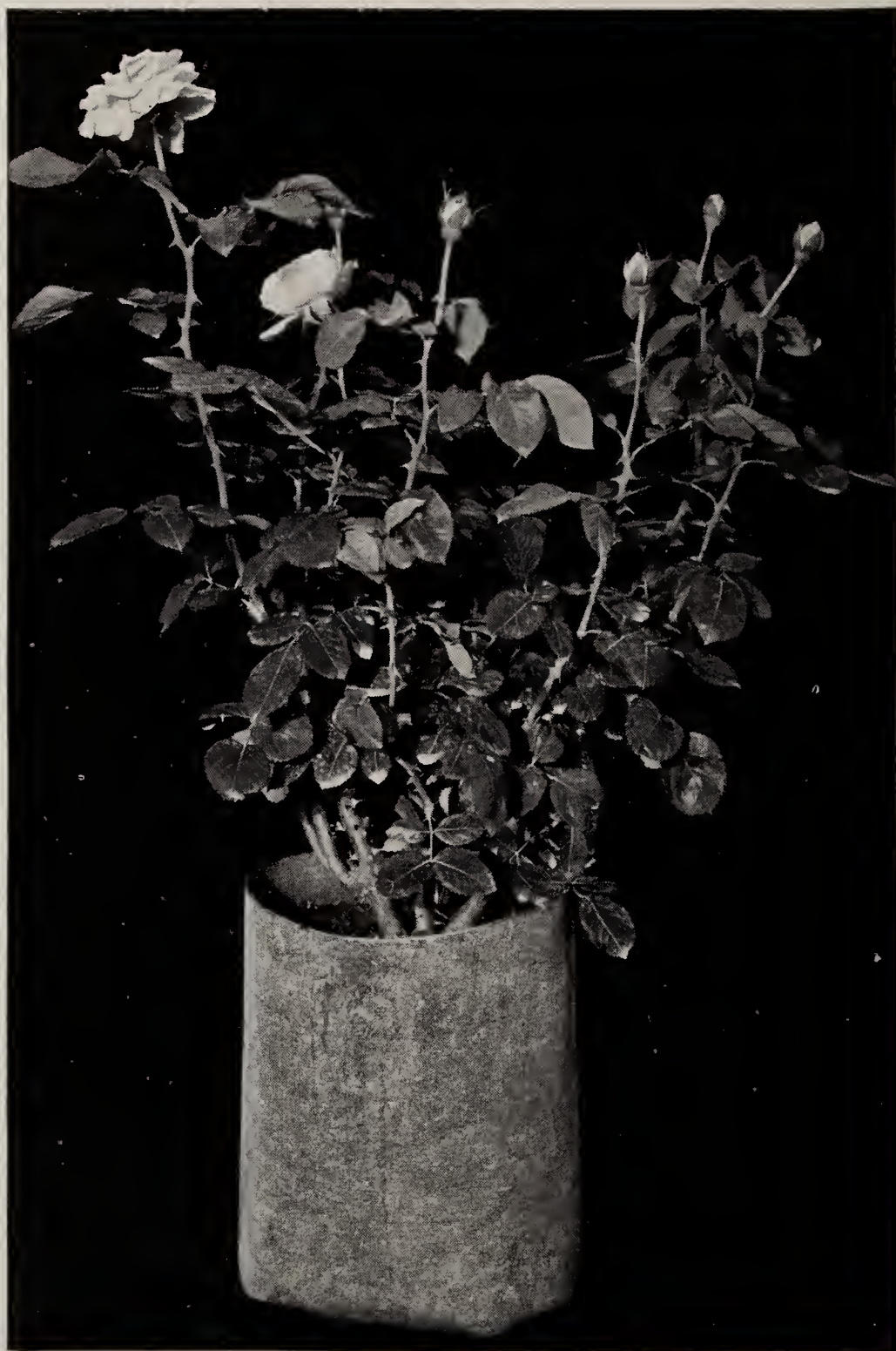
ing quince, forsythia, climbing rose and ivy have all been trained as espaliers. They are good material for the experimenter, being less expensive and quicker growing than fruit trees. There are endless possibilities in espaliering for decorative purposes and you will be well repaid by the beauty in the spring, the fruit in the fall—to say nothing of the admiration and interest of friends.

*Unique effect of espalier Russian olive
against a brick wall at home of
Mrs. and Mrs. C. Earl Davis*



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THERE IS LIFE IN THE SOIL

THOMAS L. MARTIN

Agronomist, Brigham Young University, Provo, Utah
Exrtacts from Speech Delivered at Rocky Mountain Horticultural
Conference, Denver, Colorado, February 3, 1948

OUR western soils are young. They are not fully developed. Over the centuries, during the soil-forming processes, plant foods accumulated and, in a way, have been stored in the soil. When men broke up these virgin soils these vast stores of food elements were released. The farming of these soils caused the food material to be used up to the point that artificial fertilization became necessary to meet the growing crop needs. This artificial fertilization, however, does not always provide all the chemicals needed. Nitrogen, phosphorous and potash are there in abundance but are in such a pure state that the other minor elements such as zinc, boron, sodium, etc. are lacking. The crops, even though they may have the proper bulk, lack the essential health elements. Hence, health problems enter the picture and are usually associated with soil deterioration.

The work that is needed is that of making *more* soil. The undecomposed part of our western soils is rich in unavailable substances. One can make them available by using more barnyard manure, green manure and by growing humus-building crops. This is the kind of fertility towards which one must strive. Manures and more manures are needed for better temperature, decreased erosion, soil granulation, ease of workability, food for bacteria and better quality of fruits and vegetables. Of course, commercial fertilizers have their place and must be used, but for best results, used as a supplement to organic matter.

The crops produced by such a system make man and animals thrive. The turkey grower tells us that when

their flocks are fed grain from manured land they are healthier, more vigorous and more resistant to disease than when fed grain from land that has been fertilized with commercial fertilizer only. Rabbits grow twenty percent faster when fed plants grown on manured soils. Grass seeds are higher in vitamin B content than seeds grown on land treated with commercial fertilizer. There are many explanations for this but one reason is that the putrefactive process in animal intestines causes greater growth-promoting substances to accumulate and when the manure is plowed under the crops are very much stimulated and are of better quality.

Carbon Dioxide Gas

There are other reasons why manures are so important. The carbon dioxide gas that is produced in the decomposition of organic matter does much to liberate the essential plant foods. For every pound of potassium, nitrogen and phosphorous that is liberated by this carbon dioxide, twenty pounds of calcium is also made available for plant use. In the growth of crops on a given area it has been found that for every 336 pounds of nitrogen, 450 pounds of potash and 132 pounds of phosphorous that are used in the growth of the crop, 10,800 pounds of carbon dioxide are also being utilized. This carbon dioxide is just as essential for the fertility of the soil as are the mineral elements. The carbon dioxide comes from the decomposition of manures.

Specific soil molds are very active during the first stage of organic matter decomposition. These molds are

very effective in producing soil granulation. There are specific kinds of molds that develop at certain stages of organic matter decay that are very effective in increasing water infiltration in the soil. This in turn prevents soil erosion. When the problem of soil erosion has been mastered it will be found that these soil molds, associated with manures, have done much to make this possible. Chemicals are released from the soil while undergoing decomposition. In every ten tons of manure there is an average of one hundred pounds of nitrogen, fifty pounds of phosphorous and one hundred twenty pounds of potash present. This is the equivalent of 1150 pounds of the average commercial fertilizer.

It is interesting to note that there is a distinct residual effect from these manures. This effect varies in different parts of the world. Manures have been shown to have beneficial effect for twenty years after they were applied. Bulletins from the Rothamsted Experiment Station in England report improved crop growth on soils that at one time received manures for twenty years and then no manure application for a period of 100 years. Yet the effect of that twenty-year treatment 100 years previously is very noticeable on the barley grain grown.

Bacterial and Mold Activity

Organic matter is very essential for bacterial and mold activity. So many people fail to realize that the soil is a great mass of living matter. In one acre of soil, six and one-half inches deep, there is present in active form *billions* of micro-organisms. One twenty-fifth of an ounce of soil carries approximately 15-20 million bacteria, about 700,000 fungi, 300,000 to 400,000 actinomycetes, 150,000 protozoa, thousands of algae, nematodes, insects and other animal life! They are working for the good of man. With-

out them no life would be upon the earth. They are organized as effectively as any human social organization. The different groups play their part and create an ideal state for seed germination and growth. They decompose organic matter; they dissolve plant foods, liberating the acids which aid in this process; they take the nitrogen from the atmosphere and from manures and change it so the plant can use it.

This soil population is so complex and its activities so numerous that it is a tremendous challenge to man's limited knowledge. Men are apt to look upon the soil as a piece of dead, inert matter but when one studies it one becomes impressed. The shapes of the micro-organisms, their numbers, their activity, their complexity fill one with awe. Everyone should realize that one cannot "farm" the soil without considering this life in the soil. The micro-organisms utilize and require energy-food themselves. For every forty pounds of nitrogen that have accumulated in the soil during the growing season there are 4,000 pounds of energy-food utilized by the bacteria alone. This means that two tons of manure are required for this one process. Then when one considers the sulphur, the phosphorous and the carbon dioxide that are made available by the work of the bacteria while they depend for their bread and butter energy on manures, one can see quite readily that the manures must be present. There is hardly a fertility idea that is not associated with these microbes. How can one go along with soil problems without considering this life in the soil?

The future of a people is no better than the quality of the soil it occupies. Therefore a proper food supply and a suitable home are dependent on organic matter. Nitrates are essential but ammonia must be oxidized. Air

is necessary for this process as well as proper moisture. There must be a suitable soil mulch. Nitrogen fixation must be considered here too, as also the development of phosphorous availability. The activity of the micro-organisms working on the organic matter make these elements usable. Acids transfer the phosphorous, the potash, the sulphur and the iron from an insoluble to a soluble state for plant use. Organic matter and bacterial activity furnish these acids.

Let us, therefore, plan and work in the direction of more organic matter fertility in the way of humus-building crops, green manures, barnyard manures and a livestock system of farming in connection with whatever a farmer's specialty might be.

WATERING

Watering is both a chore and a perennial problem. One rule is, "Do not water when in doubt." Another is, "When you water, do it thoroughly." Really soaking the soil is a tedious task. An idea is to take the nozzle off the hose and replace it with a sack of stout cloth. This allows the water to flow easily and harmlessly. When one area is soaked, move the hose to the next. Above all, do not think that the "commuters' special" type of watering—a sprinkling after supper—is advisable. It does more harm than good. Get the water down at least five inches. The only way to be sure you have done so is to dig down and see.

MERTENSIA

A Colorado wildflower that is contented and a welcome guest in the garden is the Mertensia, that delightful member of the azure Borage tribe, so useful in providing true blue color in the border and rock garden. Mertensias, or Lungworts, tend to flower in early spring, giving a double pleasure by the pink buds and later by the turquoise of the fully opened, tubular flowers. *Mertensia virginica* grows to 18 inches, and is frequently found in gardens. *M. lanceolata* is a smaller plant.

The Mertensias bear an excellent reputation for being easily raised from seeds, and they stand transplanting well. My own plants were moved into the garden from the field, and have grown happily and increased on a sunny east bank.

As the season advances the plants disappear,—so that they may be interplanted with later flowering plants. And the place for collecting from the wild should be well marked in early spring.

FRANCES BINKLEY.



WILD FLOWER CONSERVATION IN THE FAR WEST

P. L. RICKER

President, Wild Flower Preservation Society

IN addition to the many national parks of the West which serve as ideal wild flower and general wild life sanctuaries, the West is fortunate in having rugged mountains and extensive mountain meadows, far from the larger centers of population, where native wild flowers are found throughout the season in a riot of color not approached for beauty in other parts of the country.

At the higher elevations, except in the Southwest, the temperatures are generally too cool to make it attractive for summer home sites but in some of the southwestern high mountains more or less extensive summer colonies have been established. These are followed inevitably by the introduction of a considerable variety of foreign weedy plants which gradually crowd out the native flora. In the valleys and lower elevations the civilizing process long ago removed most of the native flora as thousands of acres of land were cleared each year for planting, homes and recreation areas.

Now some groups are planing to spend millions of dollars of the taxpayer's money in order to dam most of our larger streams as a means of flood control in spite of the fact that areas back of all present dams are gradually being filled with sediment, particularly during flood periods. It is estimated that in fifty to 200 years this sediment will have rendered all present dams worthless and new ones would then have to be built unless engineers and appropriation committees can be brought to see the error of their ways!

The one factor that most engineers overlook is that the uncontrolled floods begin at the headwaters of many thousands of streams on slopes largely denuded of timber. Foresters have proved by experiment that forested stream slopes retard the delivery of melting snows and rain water to streams by 60 per cent. The factor that the foresters overlook, however, is that it is not the *trees* that do the major part of this 60 per cent retardation but the herbaceous ground cover which keeps the soil from being washed away from around the roots of the trees. The major function of the trees is that their leaves serve to break the down fall of the rain which would otherwise wash out the herbaceous ground cover. Fallen and decaying leaves and branches are also a retarding factor.

The forest ground cover consists largely of mosses, ferns and innumerable flowering plants and small shrubs, the roots of which combined with those of the trees, make a solid natural network that can only be duplicated by years of work on man-made erosion control areas. Not only do the smaller herbaceous native plants in which we are interested help largely in preventing erosion but they also furnish food and nesting material for birds and small animals, many of which are of decided economic importance.

All conservation-minded individuals and organizations should demand that before more flood control dams are built all stream headwaters and drainage areas should be reforested and erosion control measures started and well developed.

NEW ASSETS IN ASPEN

DON BLOCH, U. S. Forest Service

COMMERCIALY considered, the aspen hasn't been of much value to Colorado—until recently. For tourists and too many otherwise responsible citizens, the tree has been significant for little more than color-bearer to herald the arrival of fall. For the conservation-wise, aspen is a watershed tree which quickly clothes burned-over areas and prepares the ground for permanent forest types—especially in the spruce-fir zones. Its annual crop of leaves builds up the soil more rapidly than conifers and makes it permeable; spruces and firs, starting in the shade of aspen, become established, push up through them and eventually shade out and kill their protecting nurses—an example of ingratitude in nature which paradoxically results in good.

Now, however, timber from this species—once locally held as a weed tree and almost wholly unmerchantable—is actually “in the open” and on the market with other woods in Colorado. These industries, all of recent vintage, are competing for this timber—62,670 acres of which, on nine national forests in the state, support an estimated volume of about 550 million board feet.

From stands of aspen on the San Isabel national forest is manufactured excelsior, adding wealth to nearby La Veta, Colorado. Established in the

early 1900's in Denver to supply the Kindel Bedding Company, the plant originally got most of its aspen from the Pike forest. Moved to La Veta in 1938, it was destroyed by fire five years later. The present plant, the Colorado Excelsior and Mill Company, Inc., was built in '45, with all new machinery installed.

Close to a million board feet of aspen are cut annually to supply this La Veta concern. Each working day four cords of the wood are processed, yielding about as many tons of Standard No. 1 grade excelsior—the equivalent of 100, 80-pound bales.

In general the principal market for the La Veta product is in the western states, including Colorado. A large quantity goes by train and truck to California; some stays right in La Veta. The main buyers are wholesale houses, fruit and vegetable packing houses, casket manufacturers and air-condition manufacturers. The casket-makers prefer “wood wool,” the finest grade of excelsior—also producible at La Veta. The Arkansas Valley vegetable growers use a large amount of excelsior in packing tomatoes and other vegetables. Shipments are made direct to the consumers from the mill, although a number of the buyers of the product even send their trucks to La Veta to insure getting their orders filled.

Overall view of the Diamond Match Co. mill and pile of aspen logs in the yard at Mancos, Colo.





Commercial aspen stand typical of those being cut over for the matchwood plant at Mancos, Colo.

In July of 1944 the first overtures were made which resulted in the establishment, about two years later, of a plant at Mancos, Colorado which today turns out three billion match sticks in a normal year!

On the San Juan national forest, in cooperation with representative of the Berst-Forster-Dixfield Company of Cloquet, Minnesota, principal manufacturers of veneer safety matches in the United States, timber cruisers of the Forest Service found and surveyed a single stand of 70 million board feet of good quality aspen. Some 55 million of this was on nearby national forest land. Since the Cloquet firm—in order to establish a plant permanently—needed assurance of only a 2-3 million board foot supply annually, they bid in a 5 million foot sale and planned operations almost immediately.

A \$300,000 plant was built, hous-

ing a layout of machines which even yet are in the semi-secret developmental stage, and put 40 local men and women to work. An initial harvest of aspen logs, sufficient for about three years' operation, now rears like a mountain behind the Mancos building. From it, during the double 8-hour shift each day, are sliced up about 1,200 board feet. This wood, veneered, chopped, treated to prevent after-glow, dried, shaken to eliminate rejects and cartoned, comes out in the ten million splints a day which are trucked to their Minnesota plant for final clipping and dipping heads on them.

After a year's operation the original B-F-D company was purchased outright by the Diamond Match Company of Ohio. Sufficient aspen has been cruised in the area to keep the plant going another 10-15 years, according to the management. And,

since the original plans contemplated three splint plants, this is a possibility of the future along with talk of an offspring excelsior plant to utilize a by-product in the shape of bolts two feet long and four inches in diameter now sold off locally as firewood.

Finally, there is the matter of Colorado aspen and its potential use as pulpwood for paper. For two decades this possibility has been scouted by representatives of various eastern and southern companies approaching Forest Service officials in the Rocky Mountain region.

Only recently—in 1947—has the picture looked at all rosy. From tests which have been made aspen, as well Engelmann spruce, may possibly come forward as a hitherto neglected source for pulpwood manufacture.

Apparent consumption of newsprint in 1946 was 4.3 million tons and at present only 15 percent of this is derived from domestically-grown woods, largely in the northeast and on the Pacific coast. Only one newsprint mill is located in the South—at Lufkin, Texas; and there is small chance to increase the production of pulpwood from southern pines except at the expense of other products.

In the Lake States aspen already is a steady comer in pulpwood manufacture. There, on vast burned-over

areas, it comes in readily and is “cultivated” as a pulpwood species. In competition with these stands—close to the manufacturing plants—Colorado’s relatively isolated aspen forests are not, of course, a serious threat. Nor in Colorado, even in competition with our insect-killed Engelmann spruce—a much better quality tree for pulp conversion—is the aspen a close contender. The possibility is there, however, and must not be overlooked in the over-all situation.

The scarcity of aspen stems eight inches in diameter and over in the Lake States—and that is the size most prevalent in Colorado’s stands—has forced commercial small-wood-products manufacturing industries to look to other areas for their raw materials. Colorado aspen trees furnish a large volume which, if suitable for their needs, will supply them for an almost indefinite period.

If handled in accordance with sound forest management principles, under which only a part of the stand is harvested in any operation; and whereby, incidentally, its value for watersheds is increased rather than impaired by the thinning — aspen, once a despised “weed” commercially, may well become a forest crop from which continuous return will be secured.

Watch For Red Spider In Your Evergreens

GEORGE M FISHER

THIS is the time to expect an infestation of Red Spider Mite in evergreens. Almost all types are attacked.

This tiny mite does considerable damage to the evergreens often before it is detected. Ordinarily the mite hatches in June or July and feeds on the juices of the foliage. When numerous enough it kills the foliage and

greatly weakens the tree. In very hot weather, without control measures, the trees may easily succumb to the attack.

The first indication of the presence of the mite is dull, sooty or dusty appearing foliage, generally in the tops of the trees. Later stages display a brick-colored foliage, quite dry and dead, and webby deposits throughout

the foliage. With a hand lens the small, round, pinkish eggs and darker adults may be seen; all about the size of the diameter of a common pin.

Effective control of this most troublesome pest of evergreens requires care and persistence. It should be started early, before the damage becomes severe. Occasional forceful spraying with water is helpful in reducing the infestations. This treatment should be repeated at weekly intervals through June, July and August. Do not hose the tops of evergreens when the sun is bright but arrange to give a thorough soaking bath in the evening hours.

If water and good pressure are not available or if there are already thousands of the tiny mites crawling over

the plants, dusting sulphur applied with a hand dust gun will be necessary for completely effective control. Dusting sulphur works best in temperatures over 80 degrees. Be sure to use *dusting* sulphur or fine-mesh wettable sulphur—not flowers of sulphur. The sulphur should not be poured heavily over the plants as too heavy deposits will cause foliage burning in the hot weather required for the applications. It is best to stand a foot or two away from the plants when dusting and with the hand gun create a thick fog of sulphur, allowing the wind to drift the dust through the plant. Take care that all parts of the plant are covered. Dusting every ten days with one or more water sprayings in between will effectively control the mite.

THE WEEKEND GARDENER

I NOTICED a piece in the morning paper warning all home owners to look at their Colorado Junipers and see if there might be aphids on them. It said that ants running up and down the tree usually indicated the presence of aphids. I'll look for them. I don't see anything—whoa there, I saw something kick. Sure enough they are on this twig as thick as they can stick. I'll get my sprayer and give them a shot of nicotine or rotenone. These two old Junipers have been here for about thirty years and have been very beautiful most of that time, but now they are beginning to get thin and ragged and they almost hide all view of the street from the front windows. At the rate that I paid for them originally they must be worth a hundred dollars apiece by now. The Oldtimer tells me that the best thing to do with them is to take them out and put in smaller plants again. (I wonder if he is working for some nursery company.) No, he tells me, this is really good advice; that I have already gotten my money's worth from them, and if they are spoiling the effect of the original planting they should be removed. O.K., bring the axe.

I wonder if I should put back the same kind of juniper. Isn't there some other plant that will stay small longer, and give me more for my money? Sure, the Oldtimer says, I can use some of the low-growing Junipers like Pfitzer's or Von Ehron's and keep them trimmed down indefinitely, or I can plant one of the dwarf pines like Mugho or Pinyon. In the twenty years that the Junipers were growing probably the landscape men have found new and better kinds of plants. I'll ask one of them.

I believe that I will see if I can get a good landscape architect to take a couple of hours to look over my place and tell me the things which I should replace and new plants that I should put in to bring the planting up to par.

THE OPPORTUNITY OF AMERICA

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TO rephrase an old historical observation: Westward the star of gardening makes its way. As the other arts, gardening does follow the star of empire. The legendary horticulture of Egypt, the artificial edens of Babylon, the graces of Greece and the roses of Rome—they flourished and they fell with the rise and fall of military and political might.

In our own era the gardens of Italy, of France, of all Europe, reached their respective heights as the world poured in wealth because of empire building. We who have enjoyed the gardens of Britain, in particular, know how magnificently plantings are accomplished over there. Especially have we marveled at the astonishing devotion displayed. This has been true not only in the green and gracious countryside but even in the wretched slums of the great cities. British gardens add glory to the world.

However, the star of empire is setting over Europe and it is rising over America. The crumbling of nations overseas must mean an ebbing of horticulture there. Just so, the tremendous economic development anticipated for the United States can only mean at least a new opportunity for gardening here. Being Americans, undoubtedly we will grasp the opportunity with characteristic enthusiasm and garden as no nation has ever gardened before. If this be so, then now is the hour for all sincere American gardeners to recognize our national horticultural opportunity. It will be years, doubtless, before we have as good gardens as Britain has now—and even longer before we have as many good gardeners. This is relatively unimportant. What is vital is that we who garden already should resolve at the beginning of the boom to

direct the growth of gardening to the advantage of everyone. *This is of great importance, for in a modern civilization good gardening is one of the great factors that produce a stable, sensible and contented people.*

What direction should our influence take? From here and now it would seem one basic service will be that of determining we shall not continue with a pallid copy of European horticulture. The blight of aping Europe has too long harmed and hindered various phases of American culture. In literature it was much too long a time before we managed a divorce. Even now we give unmerited value to overseas writers. In art, and even more particularly in music, we still behave as children striving not to be creative but as students hoping to please alien teachers. In gardening we must break away from European ideas.

Here, our opportunity in horticulture is boundless. Indeed, it is so vast that we can never have a single type of American gardening. Of course, such is not to be desired. A Cape Cod cottage garden in New England would be as much out of place in the Spanish patios of California as the lushness of a Florida garden would be in the austerity of the Dakotas. Each section of this vast continent which is our nation will develop its own type of gardening—and magnificently, too.

However, beneath all this consequent richness of variety there must be unifying principles which will express our national being. This is, indeed, to be expected, for gardening is an exemplification of a nation's life. Our gardens will be "American." *Everywhere we should make ample use of our native plant material. We*

have a wealth of it and it merits much more consideration than it has received. This will mean that we will avoid exotics—those plants which do not belong in our gardens and as such are vulgar. They are used not for beauty but for ostentation. Witness the use of palms, orange trees, cannas, crotons and the like in our northern city parks. We want beauty—not plants we have accepted just because Europe has always used them.

Then, we should proceed energetically to develop public plantings. This is not to be those in municipal parks and gardens alone, valuable as they are. *This is to include the plantings of our roadsides — everywhere and adequately. The shame of our roads is dangerous not so much in the fact but in our casual acceptance of it.* The present Blue Star Highway idea is one of the most encouraging developments in this field yet apparent. It is a good beginning but only the first step.

American gardening will be democratic. By this is meant that our gardens will be within the reach of everyone, both in cost and in requirements. Certainly we will continue to

have great gardens, both those of great wealth and those of financial endowments but the great majority of the gardens, millions upon millions of them will be those of plain people—those whom one of our radio commentators describes as Mr. and Mrs. America.

The essential point here is the difference between our gardening and that abroad. In Europe gardening is largely the work of hired help. In America we do nearly all the work in our own gardens ourselves. In days to come the garden budget will be on the same level as the family expenditures for rent, heat, light, clothing and the rest. Gardens will be an integral part of house-keeping and homemaking. They will be part of the American way of life, for when many millions of us get down on our knees in the soil day after day, when every plant we grow will have individuality sufficient almost to make it a member of the family—then we shall really garden.

Thanks to fortune, we are about to begin a new era in gardening. It is for us, who are gardeners now to make sure that our America measures up to this great opportunity.

W. H. C.

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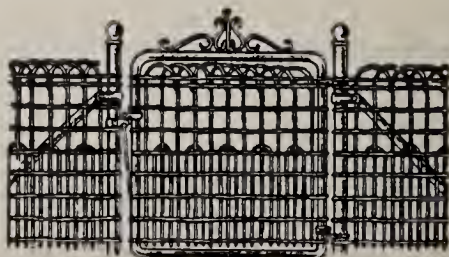
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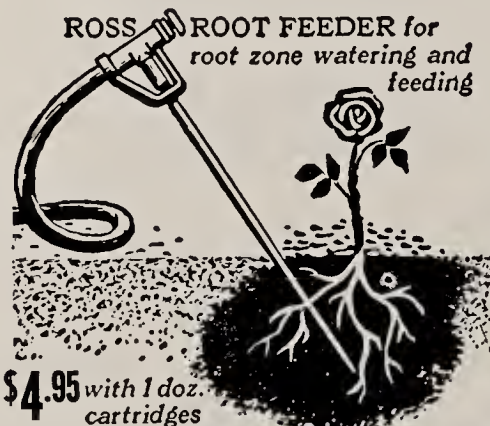
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CONSERVATION

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Conservation means the wise use and replacement of our Natural Resources, so that we ourselves and future generations may continue to benefit by them.

The PURPOSE of Conservation then, is to preserve the balance of Nature, to prevent soil erosion, to protect existing forests and to plant new ones, to clear the streams so that aquatic life may exist and the water be right for our use, to protect wild life intelligently and unsentimentally so that it may perform its proper function. Conservation will increase the production of food, fibre and fuel. It will mean the economic salvation of our country.

ASPEN LEAF SPOT

The usual fall display of color in the Aspen leaves was missing in many parts of the mountains this past fall. Many people have inquired as to the cause. Mr. Arthur L. Nelson, Assistant Regional Forester of the U. S. Forest Service explains in a special bulletin that this difficulty is caused by a fungus disease called *Marssonina populi*. This disease is probably encouraged by our recent unusually wet springs. It causes brown spots on the leaves and induces them to fall prematurely. It may affect the young twigs, and gives a generally unhealthy appearance to the trees affected. Very little is known about the life history of this disease, but it can be controlled in trees under cultivation by the application of any standard fungicide such as sulphur, Bordeaux or Fermate.

THE WEEKEND GARDENER

MOM told me this noon that it looked to her like some of the plants in the perennial border were wilting, I can't believe that it is possible after the hard rains that we had two weeks ago. Sure enough, the ground does look dry, but I remember that the Oldtimer said that the surface of the soil didn't count for much; that it was underneath that counted. I'll get a shovel and investigate. Yes, the ground around that peony on the south side of the house is really dry away down. I'll get the hose set on that spot at once. The ground around the Daylilies on the north looks just as dry, but I'll also prospect there and see what the condition is a few inches down. Well, that's surprising, I found the ground plenty moist around those plants. I believe that they will go for several days without any more watering. I once thought that watering was a job that any fool could do, but I am beginning to believe the Oldtimer when he said that watering was quite a science.

As I rest my back, wipe the sweat from my face and look around my yard I wonder if I could not simplify it a bit. There are a number of beds which do not have any apparent reason. I expect that I made them some years ago when Mom brought all those nice plants home from the nursery and did not have any place to plant them. I am going to work over the whole yard next fall and see if I can not eliminate a lot of unnecessary work. The Oldtimer tells me that it will probably make the whole place look better to make the plantings simpler and more appropriate. I'll be compelled to cut down the work on this large garden or trade it off for a smaller place. It was fun once but is just plain drudgery now that I do not have the kids around to help.



The Green Thumb

JULY, 1948



HOW MAY WE HELP YOU?

THE purpose of this association is to promote Forestry and Horticulture in the state. We would like to be of the greatest possible help to gardeners with their individual problems, and we would also like to encourage the preservation and development of all horticultural features of Colorado. Included in our program are the following activities. Will each member take the time to look over this list and let us know which of these things, in his estimation, are of the most importance.

1. Publication of The Green Thumb.
2. Articles on seasonal problems in newspapers and magazines.
3. Radio talks.
4. Talks to garden clubs and other organizations.
5. Evening meetings conducted by various experts.
6. Large gatherings of the membership and the public conducted by imported experts.
7. Establishment of societies of specialists, such as roses and iris.
8. Landscape schools in a central location.
9. Encouragement of Nature appreciation and gardening among children
10. Arranging of trips to the mountains to study native plants.
11. Arranging for tours of good gardens or parks in the city.
12. Answering questions on personal gardening problems by phone, mail and person.
13. Promoting the establishment of state and roadside parks.
14. Encouraging street tree planting and civic beautification over the state.
15. Arranging for the setting aside of botanical areas.
16. Establishment of botanical gardens for experiment and study.
17. Setting up of a library of horticultural books, bulletins and magazines.
18. Assembling of an herbarium of native and cultivated plants.

Do you want more talks and demonstrations arranged for small community groups, or do you think that the horticulturist should make more personal calls?

JULY SCHEDULE

July 3-11—8-day botanical collection trip to the wild country above Monarch Lake. Call Horticulture House for particulars as to time, equipment and transportation.

July 16-19—3-day visit to the Colorado A. & M. College Forestry School at Pingree Park. Camp out or cabins. Call for details.

No Friday evening meetings in July
Other trips or meetings arranged on request.

Statement by Delegates to the National Garden Conference Washington, D. C., De- cember 5-6, 1946.

It is highly desirable to provide for teaching gardening in the schools. It trains youth to be self-sufficient in times of personal or national emergency. Study of nature is a strong influence in building character and morale.

Highways, streets and parks have an intimate relationship to home and community living. Landscaping and zoning with the cooperation and guidance of local groups can protect our highways from the rash of roadside blights that now line with ugliness so many of them.

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ORCHIDS TO MRS.

CHARLOTTE A. BARBOUR

Formerly a resident of Denver, of late years Mrs. Barbour has been a resident of New Hampshire, where she was employed in forestry work. Upon her return to Denver last fall, her interest along that line brought her to Horticulture House, soon after her arrival, as a member of the Association and an addition to the administrative staff.

Here her knowledge and experience in the actual practices of forestry publicity proved invaluable, as she voluntarily assumed a part of the load borne by Mr. Kelly.

For several months she gave generously of her time and ability with no recompense except the pleasure she found in her job as Editorial and Advertising Assistant to the *Green Thumb*. Almost unaided she solicited the advertisements which have appeared in the magazine this year and gave assistance in proof-reading and other routine work at the House.

Her forestry interests have taken her to New Hampshire again for the summer, where she has a sizeable plantation that needs her personal attention at this time of the year. However, we have her assurance that she will return in the fall to take up the duties she temporarily relinquished.

The Green Thumb

A Bulletin of the

COLORADO FORESTRY AND HORTICULTURE ASSOCIATION

Organized in 1884

GEORGE W. KELLY, Editor

MISS ALICE WOOD, Assistant Librarian

L. C. SHOEMAKER, Treasurer and Custodian

1355 Bannock St., Denver 4, Colorado

Phone TAbor 3410

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

Published Monthly.

Sent free to all members of the Association.
Supporting Memberships \$2.00; Sustaining \$5.00;
Contributing \$10.00; Patron \$25.00; Donor \$100.00

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Vol. 5	July, 1948	No. 7
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The Plight of Horticultural Research In The Great Plains-Rocky Mountain Area

DR. A. C. HILDRETH

*Extracts from speech delivered at the Rocky Mountain Horticultural Conference
Denver, Colorado, February 3, 1943.*

A WELL developed horticulture means more than extending an interesting hobby; it has broad social and economic implications. Better horticulture means better living, more attractive home surroundings, parks and roadsides, a more adequate diet, a better balanced agriculture and a more stable population.

A highly developed horticulture is a sign of a highly advanced civilization. Primitive peoples and pioneer folks do not develop such refinements. This present up-surge of enthusiasm for horticulture, touched off by the Colorado Forestry & Horticulture Ass'n. shows that our pioneer period is over and that the civilization of this great region is becoming mature. For the past score of years our station at Cheyenne has been conducting research to get at some of the fundamentals of horticulture in this region and this recent show of public interest is most heartening to us.

These high plains and mountains were the last region of the United States to be settled by the white man. The eastern and mid-western states were settled first. Then people passed through here on their way to settle Utah, Oregon and California. Within the lifetime of people still living Indians hunted Buffalo where Denver now stands. At the time these first white settlers came to Denver the eastern seaboard had already had 250 years in which to develop a horticulture. We got a late start—by exactly a fourth of a millenium.

This whole area was called the "Great American Desert". Plains Indians were hunters, not farmers, and

could contribute nothing to horticulture. Settlers who tried to import plants from the East found them generally unsuited to our climate and soil. They also found that many of the traditional gardening practices do not apply here. They could not draw on the old world for their horticulture as the only parts of the old world with similar conditions were the remote plains of Siberia and Mongolia and the high inter-mountain plateaus of Central Asia. The people of these areas had developed little horticulture and nowhere in the world could be found a reservoir of ready-to-use horticulture plants and practices that could be transplanted bodily to our plains and plateaus.

Only very recently have attempts been made to breed strains particularly for our own conditions. Of course our cultural practices are still rather hopelessly European and eastern American. Such a situation is only natural because horticultural research and horticultural writing have been done in the East; horticultural plants are selected and grown there, gardeners trained there. To get our Plains horticulture on an equal basis with other parts of the United States we must do horticultural research here and not in Massachusetts. From our own research we must build up our own horticultural literature. We must breed plants adapted to our conditions. Our schools and colleges must teach Plains-Rocky Mountain horticulture to our future gardeners, seedsmen, nurserymen, landscape architects and researchers.

Let us consider in what ways this

TABLE I

COMPARISON OF MINIMUM TEMPERATURES

City	Minimum Temperature	City	Minimum Temperature
Greeley	- 45	Duluth, Minn.	- 41
Fort Collins	- 38	Minneapolis, Minn	- 34
Sterling	- 33	Madison, Wis.	- 29
Boulder	- 33	Montreal, Canada	- 27
Grand Junction	- 31	Bangor, Maine	- 24
Denver	- 29	Detroit, Mich.	- 24
Colorado Springs	- 27	Boston, Mass.	- 18

part of the country differs from the East or the Middle West. First of all this is a land of cold winters, although with our dry atmosphere and bright sunshine we do not seem to feel this cold. Winter injury to plants, however, is determined largely by the minimum temperature and its duration—not by the way we feel.

Above are the minimum temperatures ever recorded in several Colorado cities and also in several of the supposedly cold eastern cities. Of course such low temperatures do not occur here every winter. But temperatures approaching these minima do occur here frequently enough to limit our planting lists to species with more cold endurance than will be necessary in most parts of the United States and Canada. For the past twelve years this region has enjoyed comparatively mild winter temperatures and people have been planting tender species with a great deal of confidence. Mankind always wants to stretch the culture of plants be-

yond their natural climatic range—and he always gets into trouble by doing so!

This is a dry country. Our total precipitation is low and decreases rapidly from east to west. There is more difference in rainfall between eastern and western Colorado than between Philadelphia and Kansas City. The total precipitation of Denver is about one-fourth that of the Atlantic Coast cities. The seasonal distribution of the rainfall is also different. Along the eastern seaboard each season gets about the same amount of precipitation. Because evaporation is low in winter this means that in winter eastern soils are saturated with moisture and the tops of plants are usually wet. In the high plains all seasons are dry but our winters are particularly so, getting about a fourth as much precipitation as in spring and summer. Our winter precipitation falls mostly as snow and our Chinook winds often evaporate it without adding any moisture

PRECIPITATION IN INCHES OF WATER

TABLE II

City	Spring	Summer	Fall	Winter	Total
Burlington	4.69	8.13	2.99	1.07	16.88
Denver	5.25	4.33	2.85	1.56	13.99
Grand Junction	2.31	2.26	2.39	1.80	8.76
Philadelphia, Pa.	10.08	12.84	9.07	9.87	41.86
Indianapolis, Ind.	11.02	10.45	7.87	7.92	38.26
Kansas City, Mo.	10.27	11.77	9.51	5.08	35.73

to the soil. Therefore we have to do such unorthodox things as watering our lawns and our evergreens in winter, whereas in the East gardeners are more concerned with winter drainage.

TABLE III
RELATIVE HUMIDITY
AT NOON

City	January	June
Denver	45 – 50 %	30 – 35 %
New York..	65 – 70 %	65 – 70 %
Chicago	70 – 80 %	55 – 60 %

PERCENTAGE OF POSSIBLE
SUNSHINE

City	Winter	Summer
Denver	60 – 70 %	70 %
New York..	50 %	60 – 70 %
Chicago	40 – 50 %	70 – 80 %

Our sunlight is very intense. This is because of our high altitude and our low humidity. In the vicinity of New York a light intensity of 5,000 foot-candles is considered bright. At our Cheyenne station we have recorded light intensity of 14,000 foot-candles—nearly three times as great. Likewise Denver has about 20 per cent more winter sunshine hours than Chicago and when the sun shines it is two or three times as bright.

Our western soils are generally alkaline, having a pH of from slightly above pH 7 to pH 9 or higher. Acid soils are not found except in high mountains where the rainfall is heavy

or on the plains where someone has acidified the soil by chemical means. This explains why so many trees and shrubs become chlorotic in this part of the country and also why we cannot move many high mountain plants onto the plains. The remedy of course is to select and breed plants particularly suited to alkaline soils.

We have reviewed some of the ways in which our climate and our soils differ from those of the East and the Middle West. Let us now see what we are doing to develop horticultural plants and practices suited to our peculiar conditions. One way to determine this is to ascertain how much effort we are putting into horticultural research. Then, to see if we are really keeping up with the world, we should compare our research with the horticultural research in other parts of the country

Here are shown the number of research workers engaged in horticultural research in state and federal experiment stations according to the latest Government listing. The fifteen Eastern states which represent, combined, a smaller total area than our region have in the state experiment stations eighty-five full-time research workers and eighty-eight part-time. Our region has only five full-time and five half-time state employees. For the U. S. Dept. of Agriculture, the proportion of horticultural research people for the eastern area and for the Plains-Rocky Mountain region is

TABLE IV
HORTICULTURAL RESEARCH WORKERS

Fifteen Eastern States		Area 332,110 Sq. Miles	
	Full Time	Part Time	
State Experiment Stations	85	88	
U. S. Dept. of Agriculture.....	108		
Central Great Plains-Rocky Mt. Region		Area 357,500 Sq. Miles	
	Full Time	Part Time	
State Experiment Stations	5	5	
U. S. Dept. of Agriculture.....	9		

108 to nine! In Washington, D. C., however, some research agencies direct work in other parts of the country.

Another way to judge the adequacy of research is to compare it to the value of the industry it serves. According to the last U. S. Agricultural Census in 1945 the total value of all horticultural products sold or used at home in our region amounted to approximately seventy-seven million dollars. (It is probably nearer ninety millions today, due to the increase in prices.) Now what are we spending for horticultural research? This is a difficult figure to obtain exactly but as nearly as I can estimate it, the annual cost for our ninety-million-dollar industry is not over \$125,000! Thus our total allotment for horticultural research represents a little over *one-tenth of one percent* of the total annual value of our horticultural production. This appropriation, moreover, is devoted almost entirely to research on agricultural crops. The organized research program for ornamental horticulture is negligible.

To summarize: this region got a late start in horticulture; we were handicapped by having a soil and climate different from the older, settled parts of the United States; nowhere in the world was there a large group of horticultural plants and horticultural experience that could be transplanted bodily to our area; and, finally, we are getting further and further behind the East and Mid-west because our horticultural research efforts are so pitifully small by comparison to theirs.

Recommendations: that funds be made available to expand the work at the already existing state and federal experiment stations in this area; that private enterprise should consider establishing Botanic Gardens and Arboreta for the preservation and study of plants and trees.

REMEMBER THE CHESTNUT!

Extract from American Forests Magazine of April, 1948.

Though it struck many years ago, the tragedy of America's native chestnut trees lives as a constant warning of what happens when we are unprepared to deal with tree-killing insects and diseases.

To the present generation of young Americans the disappearance of the chestnut from the eastern woodlands is little more than a chapter of history. And to their great misfortune they have been deprived of an association that is still deeply etched in the memory of many of their elders.

The story of the chestnut is one every American should know and ponder. For not only is it a tragic reminder of what can happen to a valuable resource when danger signals are ignored, but it points with millions of dead and ghostly snags, to all that is left of one of the most magnificent trees indigenous to our woodlands, to the fallacy of the kind of thinking that adds up to "too little, and too late." And unless the American people and their representatives in government offices show greater understanding of the destructive power of tree-killing diseases and insects, the tragedy of the chestnut can be re-enacted. The present plight of the American elm is eloquent testimony to this.

—♦—
 "The leaf of a shrub, a flower, an insect—all have style because they grow and are developed and maintain their existence according to laws essentially logical. We can subtract nothing from a flower for each part of its organism expresses a function. . . . Proceed as Nature does in her works and you will be able to invest with style all that your brain conceives."
 VIOLETTE-LE-DUC.



View from Upper Slate Creek Lake. Gore Range, Arapahoe National Forest.

GORE RANGE-EAGLES NEST WILD AREA

By C. A. KUTZLEB, U. S. Forest Service

SIXTY thousand acres of timbered slopes, sharp peaks, knife-edge ridges, glacial cirques, hanging valleys, and undisturbed alpine flora and fauna, are available for recreation and study by any hardy explorer who penetrates into the Gore Range-Eagles Nest Wild Area. This area, within the Arapahoe and White River National Forests, includes the most rugged section of the Gore Range on the west side of the Blue River along State Highway No. 9 about half-way between Kremmling and Dillon. U. S. Highway No. 6 on the west side of Vail Pass is not far from the western boundary of the Wild Area.

Except for a limited amount of grazing by domestic sheep on the west side of the area and except for the stocking of many of the lakes with trout, natural conditions within the Wild Area have been undisturbed and offer the biologist an excellent opportunity to study natural plant and animal associations.

The fisherman will find plenty of fair fishing in the numerous lakes,

but most of the streams are small and rapid and do not support fish in any numbers. The mountaineer can find plenty of cliffs here, and steep escarpments on which to practice rock climbing. The amateur alpinist who desires to attain dizzy heights without the hazards of rope and alpen-stock can usually find a comparatively easy route to the summit of most peaks. Eagles Nest Mountain rises to an elevation of 13,397 feet; and Mount Powell, 13,534 feet. Eight other unnamed peaks exceed 13,000 feet in elevation and 14 other peaks exceed 12,000 feet. For the amateur naturalist there is a band of mountain sheep to be photographed if he has the hardihood and luck to find them. Magnificent bucks and a few elk spend the summer in majestic seclusion within the area. Many kinds of the alpine and sub-alpine wild flowers can be photographed and collected.

This is a tough country. There are no easy trails which can be followed in lazy exploration! However, a few fair trails do lead into the area. On

the west side there is a trail from Highway 6 up Main Gore Creek, another up Booth Creek, and the Piney Trail will take one to Piney Lake and the northern part of the Wild Area. On the east side trails from Highway 9 make it possible to reach the Wild Area on North Willow Creek, Slate, Black, and Cataract Creeks. Any of the trails can be used to establish a base camp from which the surrounding area can be explored on foot.

The season, of course, is the summer time, from about June 1 to September 30. Plenty of snow will be encountered in drifts in the high country until about July 1, however, and, after September 1, cold weather and even snow may occur.

If you want a vacation in an uncrowded and undeveloped area, we recommend a pack trip into the Gore Range-Eagles Nest Wild Area.

Editor's Note: The Colorado Mountain Club plans to hold their annual outing in this area from July 31 to August 8.

One of my friends was recently discussing the influence of environment on the character of boys. "Do you realize," he said, "that for many years, a good many of our presidents had at least a farm background?" He went on to say that the farm was an excellent place to come from. In his opinion, the heavy labor, the inescapable responsibility and the diversity of tasks which were the lot of a farm boy gave him sterling qualities of character—firmness, perseverance, optimism, integrity and faith, to mention a few. I could not help wondering while he was talking what will be the fate of our country in the future, now that the law seems to be the necessary training for statesmanship and that only some 25 percent of our 140 millions of citizens live on farms.

—By the Roving Gardener. Reprinted by
Permission from Horticulture.

Are you interested in a Colorado Tulip Society? There is a movement now to organize one. Call Mrs. F. S. Mattocks, Box 468 Boulder, Colorado, or Horticulture House.

Lower Slate Creek Lake. Arapahoe National Forest.



Alfred Rehder, One of This Country's Foremost Horticulturists

E. D. MERRILL

ALFRED Rehder came to the United States in 1898 and his first "job" was at the Arnold Arboretum, his "salary" being \$1.00 per day. His objective was to learn more about cultivated trees and shrubs but his first task, I am informed, was to hoe the weeds out of the shrub collection and the foreman didn't look with much favor on his stopping to examine a shrub or to make a photograph of it. After some time at the arboretum he was employed by L. H. Bailey in writing up various groups of woody plants for Bailey's "Encyclopedia of Horticulture," then in preparation. He then returned to the arboretum and remained here until his retirement in August 1940 at the age of seventy-five years.

Retirement (on pension) with us begins at sixty-five but the services of really good men may be retained until the individual attains the age of seventy-five, when retirement is obligatory. The day following Rehder's retirement he showed up at the office and has reported for duty each day since except for short periods from time to time when he took a "vacation." Having seen the second edition of his authoritative, "Manual of Cultivated Trees and Shrubs," through the press (MacMillan Company), the task he set for himself was to prepare a comprehensive bibliographic index to that work. We have supplied him with all possible facilities including clerical assistance. This large and very difficult task now approaches completion and the work will be published as soon as restrictions on the use of paper are removed. I thought that the least I could do would be to see that funds were

made available to publish this index; printer's estimate, \$8,000.00. In November I appealed to various friends of the arboretum and the result was that to date we have secured about \$6,800.00 of the \$8,000.00 needed. It may be, however, that the entire work may cost up to \$10,000.00 as cost of printing tends to increase and our estimate did not include the long alphabetic index that will be a part of the work.

In the bibliographic field Rehder has done more than any living individual in the whole field of horticulture for it was he who prepared the text for the very large and important Bradley Bibliography. This work was done in various libraries in the United States and in the larger libraries of Europe. In the taxonomic field his specialty has been the woody plants of eastern Asia. His detailed knowledge of published literature of horticulture and botany is enormous and fortunately for him, with the very large and carefully selected library of the arboretum (now about 46,000 volumes and 18,000 pamphlets), he is able to check most of his references on the original works. His ambition is to be able to check *every* reference for correctness as to volume, page and date of publication. In horticulture he is, of course, the authority on the cultivated trees and shrubs of the North Temperate Zone. His elections to the American Academy of Arts and Sciences, the Linnean Society of London, the Deutschen Botanischen Gesellschaft, Botanical Society of Edinburgh, Tokyo Botanical Society, etc., indicate the esteem in which he is held in foreign countries.

On his retirement in 1940 the staff gave him a complimentary dinner and on this occasion the committee appointed to visit the arboretum (representing the Fellows and the Board of Overseers of Harvard College) presented him with a very liberal purse that enabled him to take his wife on a tour to the Pacific coast. He is modest, unassuming, is slightly handicapped by an impediment in speech, is productive and through his innate ability has reached the top of his profession. As Curator of the Herbarium at the Arnold Arboretum he occupied a key position and was of very great assistance in building up our remarkable library and the herbarium of woody plants, now containing about 620,000 specimens from all parts of the world. He is now just as keenly interested in productive bibliographic and systematic work as he was in the years before his retirement.



THE BALANCE OF NATURE

By RANDALL HENDERSON

*Reprinted by permission from
Desert Magazine.*

I am averse to anything that upsets Nature's balance. When we humans do that we nearly always invite trouble from some unexpected source. For instance, in Arizona the ranchers made war on the coyotes. Coyotes prey on rodents, and as their number decreased the rodent population increased. Rodents eat seeds, and as they became more numerous there were fewer of the Giant Saguaro seeds left on the ground to germinate replacements for the aged cacti which are dying of disease and old age. One of Arizona's greatest scenic assets is endangered. Any Park Service naturalist can relate innumerable examples of the woe that follows when

we disturb the natural order of things.

We humans know so little about the Great Plan of life on this earth it is rather surprising we have survived as long as we have. And while our knowledge of the intricate manner in which Nature maintains a balance in the world of plants and animals is infinitesimally small, we know even less about the fine art of keeping the world of man in equilibrium. We permitted so much selfishness to creep into our capitalistic system we opened the door for a vicious alternative which we call Communism. And now we are between the devil and the deep sea. I suspect that when we have learned more about natural law, we will have gone a long way toward solving the problems of human relationships.

Most businessmen live in a tiny world bounded by the business office, the home, the lodge or service club, and a two-weeks' annual vacation which seldom takes them beyond easy walking distance of a paved road.

It is good for them to break out of this squirrel-cage routine and go out and become acquainted with the fundamental things of this earth. Too continuous association with other humans in the superficial environment we have created breeds only confusion and a sense of insecurity. It is in thoughtful contact with the world of Nature that men and women most readily develop the poise that comes from inner peace. One cannot live close to the desert without acquiring a reverent respect for the God who created all this—and a faith in the ultimate survival of that which is good and true.



What are the features in the Green Thumb that you get the most benefit from, and what new features would you suggest? Let us know.

So You Love the Wild Flowers!

FLORENCE W. MYERS

WHEN the first anemones of spring open their delicate lavender flowers along the edges of the canyon snow banks, amateur nature lovers and plant hunters will flock to the mountains to load their cars with plants and wild flowers.

A few of these seekers of wild plants understand the needs of the wildlings they take from their native haunts, but the vast majority know nothing about them except that they are pretty flowers which they would like to see blooming in their flower borders. And bloom in the ordinary flower border is just what most of these plants won't do. It is a common misconception that a wild flower brought into the garden from its unprotected, unfed, competitive life in the mountains should reward its savior with lush beauty. But such is far from true. When planted in the rich rock free loam of the irrigated garden, they soon yellow and die.

Because of the wide-spread transplanting and picking of the wild flowers and their subsequent loss, many of the most beautiful species are becoming scarce and, before many years, will disappear entirely.

The native blue columbine, Colorado's State Flower, is one of the plants most often destroyed by the so-called nature lover. There is a law protecting this flower, but one seldom, if ever, hears of it being enforced. This is one of the easiest of the wild flowers to grow from seed or one may obtain well-grown plants from local nurserymen at the proper planting time.

Another, but harder to grow plant is the anemone or Pasque flower. This is one of the first flowers to bloom in the rocky canyons and few ever survive amateur transplanting. They seem to resent a pampered existence in the garden and prefer the bleak, windy slopes where Nature planted them. Here their roots are anchored by small, sharp stones which hold warmth and aid in draining away the water from the melting snows or summer rains. They disappear after blooming and will die if over-watered at this time.

Native phlox, mariposas, penstemons, blue flags and many others suffer from plant hunters and all of these are comparatively easy to grow from seeds sown in the fall. Wildlings grown from seed will often adapt themselves to our gardens where transplanted wild plants refuse to grow.

If you are truly a lover of wild flowers, by all means give a corner of your garden over to native plants. Any one choosing to be an expert in their growing can do so without stripping the mountains of their beauty. By the time he has mastered the requirements of native plants as to soil and moisture, studied their species, and learned their natural habitats he will know the varieties best suited to his purpose and how to acquire them without loss. He will then have a hobby, inspiring and full of allurements and can point with pride to his bed of natives, knowing that he has learned to preserve rather than to destroy the fast-disappearing wild flowers.



PERENNIAL COMBINATIONS

JESSE M. NEVILLS

*For a bed twenty feet long and
seven feet wide.*

For a background plant hemerocallis (Hyperion), four feet apart, leaving two feet at each end of the bed. Two feet in front of these put, four feet apart, white peonies spaced so they will not be in line with the hemerocallis. Select rather a tall Shasta daisy and plant a foot and one-half in front of the peonies and a foot and a half apart. Now a border of yellow English primulas between which later you will transplant a pink geranium. The geranium will provide the shade so much desired by the primula in summer.

The primulas will bloom in April and May, the peonies in June, followed by the Shasta daisies. The hemerocallis will grow over all and bloom in July and August with lovely yellow blooms every day, having a border of pink geraniums.

Always in any bed, between each plant, can be planted daffodils, eight or ten inches deep away from harm, to bloom in April and May.

Purple and White for Early Spring

Iberis sempervirens will make a border about a foot wide completely covered with white flowers for a long period. Back of this place an early deep purple iris. Mrs. Roosevelt.

Clip the iberis when thru blooming and it will be a good looking border all summer. It stays green all winter. It covers the iris during the summer, grows from a central root, therefore does not spread and can be propagated by cuttings. It is a most desirable plant.

Back of this for Fall blooming I have chrysanthemums, Harbinger and

September bronze. Between the iberis are planted marigolds (Spry) as a border in summer for the mums.

Trollius and Maggie Mott Violas

Trollius, which has a yellow flower and likes a cool, damp location, is even more beautiful if bordered with blue (Maggie Mott) violas, which also like a shady cool place.

Bleeding Hearts and Primulas

The good old fashioned bleeding heart, which likes shade, is lovely with an edging of yellow English primulas, which also thrive better in the shade.

Shasta Daisies and Monarda

Late Shasta daisies and either red or pink monarda will give color and bloom to the garden in July after the Spring perennials are gone and the Fall plants are not yet ready.

Color Early in May

Tulips and phlox divaricata canadensis bloom in May. The phlox bluish-lavender flowers make a lovely border for white, pink, or yellow tulips.

In front of these, to bloom in March and to be in nobody's way, may be put many crocus. In fact, every bed and border should be surrounded with crocus, thereby having flowers and much color in March, when badly needed.

The foundation of any border can be for three successions of bloom—iris, peonies and chrysanthemums. To this can be added an endless variety of plants and bulbs.

In Colorado all plants do not bloom at a given time every year. The above I have had bloom together more times than not.

Do you want to know how to raise bees, beets or berries? Refer to the books and bulletins on the subject at Horticulture House.

THE WEEKEND GARDENER

I NOTICED as I drove home today that many of the early flowering shrubs had finished blooming and the flowers had dried up. According to the Oldtimer that is the time to do the necessary pruning on them. He explained that by doing it now it would allow the plant to make new growth and produce bloom buds for next year. I saw some shrubs that my neighbor next door had trimmed and taken out all the small twigs from the bottom 3 feet. They really looked awfully naked to me, and as tho they should have some of the "new look" skirts to cover their bare legs. I'll ask the Oldtimer if that is the best way to trim shrubs. He tells me that that is not the best way as it spoils their natural shape and character. It is usually better, he says, to take a few of the old stems out to the ground each year, after they are a dozen years or so old. This allows new growth to fill in and keeps the shrub looking young for many years.

I noticed some white flowers on my flowering plum a few weeks ago. I wonder if it is another case of plants "going back" to original varieties. I'll look around and see if I can find the trouble. I notice all these stems which had white flowers also had leaves which were larger and a different shape from the others. The Oldtimer tells me to look and see if these are not sprouts from below the graft, and if so to cut them off as close to the main trunk as possible. He tells me that this is a frequent occurrence on flowering almond and flowering plum, as they are often grafted on wild plum roots.

I read somewhere that it was a good practice to cut off the seed heads after lilacs were through blooming. The Oldtimer tells me that this is to prevent the plant using up valuable energy trying to produce many unnecessary seeds. I also think that it helps the appearance of the plant.

Do you realize that your garden might be more beautiful if it had been planned better? There are dozens of books at Horticulture House about planning a garden that you may read.

Does the material that you find in the Green Thumb help you with your garden problems? Pass the word on to your neighbors. The more members we have the better service we can give.

Spectacular Rock Formations Along The Hogback Near Denver

These should be preserved as a State Park.

See Pictures on following pages reading from left to right, top to bottom.

Page 15

George Washington
The Gargoyle
Birdseye view, looking N. W.
The Flatiron

Page 16

The Cobra
The Dragon
Dopey
Ben Franklin

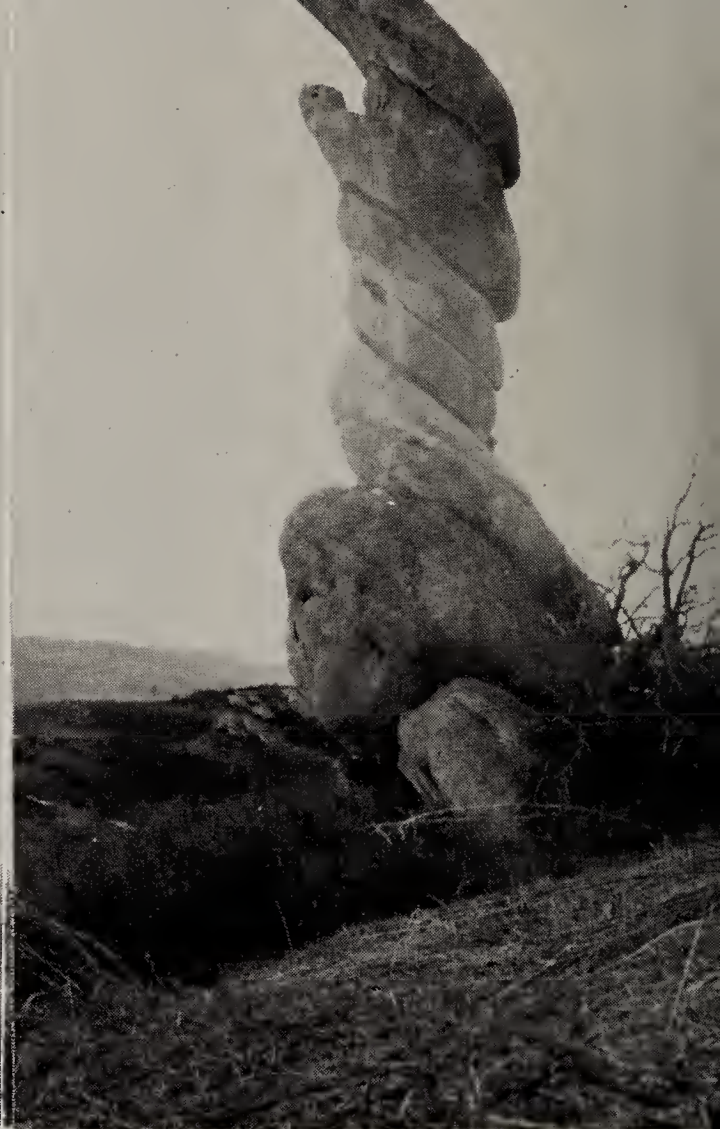
Page 17

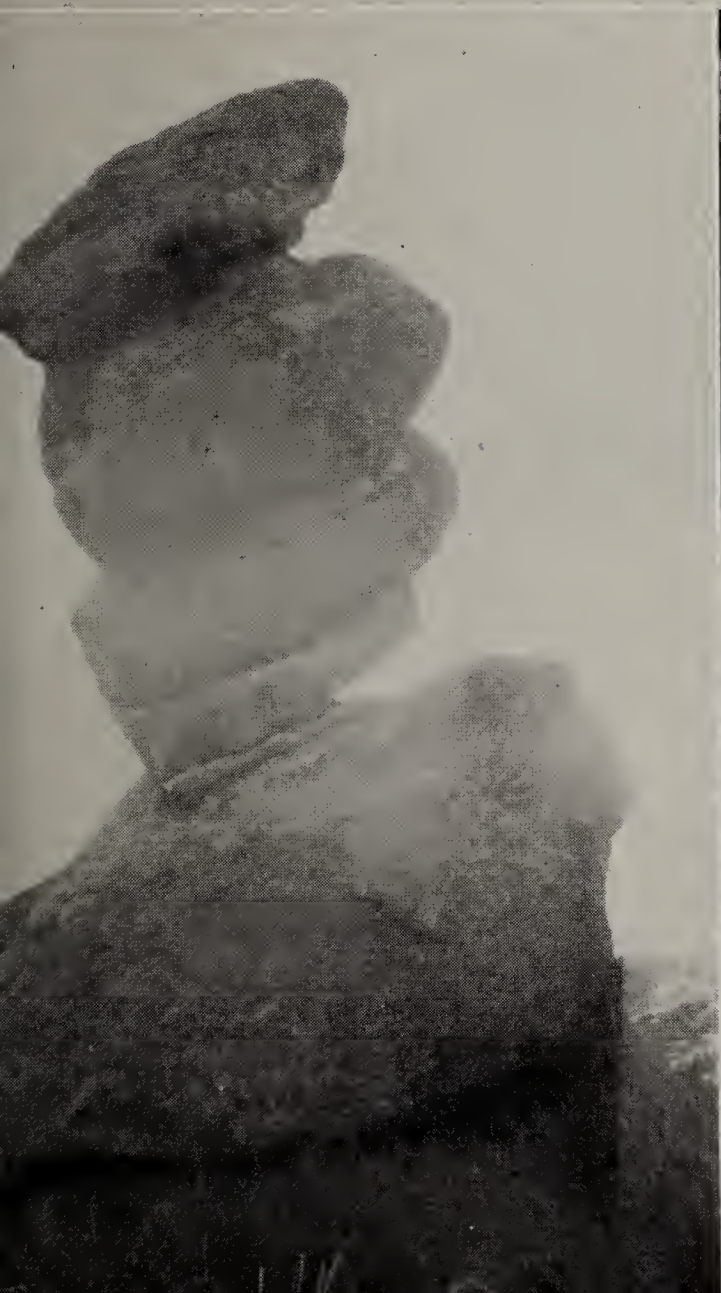
General View
Balanced Rock
Leaning stack of cakes

Page 18

Jonah and the whale
Angel at rest
The teapot









STATE PARKS OF MINNESOTA

MINNESOTA'S state park system, in operation since 1889, now includes 82,650 acres in 57 areas varying in size from 1/10 acre to 32,000 acres. The value of this property is about 6½ million dollars. Various classes of areas are included, designated as State Parks, State Memorial Parks, State Recreational Reserves, State Scenic Reserves, State Waysides and State Monuments. The average size of the first three classes is 2363 acres, the State waysides 50 acres and the State monuments ½ acre. Seventeen of these areas include facilities for overnight camping, all of them have provision for picnicking, and many have arrangements for playfields, boating, swimming, nature trails, museums and amphitheaters.

There is about one acre set aside in state parks for every 30 residents of the state. It is the plan that no citizen need go further than 30 miles to be able to enjoy these recreational facilities. These areas are selected for their scenic, recreational, historical, geologic and botanical interest. While they are provided primarily for citizens of the state they have proved a great attraction to out-of-state visitors, attracting much business to the state.

The policies which have governed the administration and operation of the Minnesota State Parks have evolved gradually through lessons learned by experience in meeting and solving the problems created by the public, through their use of the areas. Every attempt has been made to so develop the facilities as to best serve the public and at the same time to afford protection to the dominant natural assets which give the parks their value. Parks are justified not for themselves as such, but for what they

contribute to public enjoyment. State parks attempt to provide for the more extensive types of recreation not afforded by municipalities, and at the same time to preserve the natural values to the maximum in order that posterity may enjoy some of the God-given beauties of nature which this generation has been privileged to inherit and enjoy.

Two hundred and seven full or part-time people were employed by the Minnesota state parks in 1946. The expenditures that year amounted to \$233,000.00. The management of the parks is invested in a Director of State Parks, which is a division of the State Conservation Commission.

The state park system supplements and cooperates with the U. S. Forest Service, the U. S. National Park service as well as municipal and county park systems.

Colorado might learn much from the experience of Minnesota in providing for the recreational needs of their citizens and visitors. The immediate needs are two—to provide picnicking and recreational areas where there are now none available, such as in the eastern and western ends of the state; and to preserve while they are yet unspoiled, outstanding areas of botanic, geologic, scenic and historic interest wherever they may be located.

Is there a new bug in your garden every day? Would you like to know more about them and how to control them? There are many books and bulletins in the library at Horticulture House that tell of insects and their control.

Are Roses, or Iris, or Cactus your hobby? Read all about them and many others in the library at Horticulture House.

Wild Flowers Suitable For Cultivation

L. J. HOLLAND

IT is impossible for me to select any one wild flower as a subject for the home garden, but I would like to call attention to some of the lesser known natives that are truly gems for the rock-garden or low border.

All of these are hardy perennials and require a minimum of attention, asking only full sun and a hot, dry situation. None are particular as to soil, for in their habitat they are found in adobe as well as sandy loam. A neutral to slightly alkaline condition is indicated.

Let us begin with the lowest growing and one of the earliest to bloom, Easter Daisy (*Townsendia excapa*, white; and *T. exima*, purple), is a lovely perennial daisy that snuggles closely to its tufted foliage. Blossoms usually appear in April.

Sand Lily, (*Leucocrinum montanum*), with its waxy-white, star-like flowers nestled in the grassy foliage has about the same season and is only a few inches taller. Since it is Summer - dormant it should be placed where later flowering plants will cover the space it leaves.

Only slightly later is Fringed Puc-

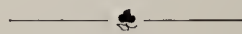
coon, (*Lithospermum linearifolium*), with its tiny golden trumpets and gray-green foliage, growing about six to eight inches high.

Golden Evening Primrose, (*Lav-
auxia brachycarpa*), the low growing cousin of the Scented Evening Primrose, is of a deeper golden color and has as large flowers with even longer trumpets. It is decidedly at home on a bank or terrace.

Callirrhoe involucrata is variously known as Poppy Mallow, Buffalo Rose and Wine-cups, with deeply cut leaves and bright carmine flowers requires more space than most, as it may attain a diameter of three feet, but is in no way coarse, nor apt to crowd out other specimens.

Lastly we come to one of the oddities of the plant world that is at the same time exceedingly beautiful. Sensitive Brier or Rose (*Schrankia Morongia*) *uncinata* is really a small shrub, about a foot high, has bipinnate leaves that fold tightly when touched. The flowers are fluffy rose-colored balls about an inch in diameter, interspersed with stamens like golden pins and are deliciously fragrant.

There are many more worthy species, but these will suffice for the time.



GIVING

God gives us joy that we may give,
He gives us joy that we may share;
Sometimes He gives us loads to lift
That we may learn to bear
For life is gladder when we give
And love is sweeter when we share
And heavy loads rest lightly, too,
When we have learned to bear.

ANON.

Easter Daisy

Photo By C. J. Ott



THE DISAPPEARING CALIFORNIA FLORA

LESTER ROWNTREE, Carmel, Calif.

During the last two years the population of the West Coast has been doubled and the preservation of our native plants is more seriously threatened than ever. More virgin growth must be torn up for homes and more land put under cultivation. Last year I found many of my old seed collecting stands unrecognizable.

The steady advance of destruction makes preserves and protected primitive areas all the more imperative. If the wild flowers are to be saved from extinction this is the only way

left. Botanic gardens are excellent in their way but what we need is more places, each in a different climate, and one where native growth can be allowed to remain unmolested in the location where it naturally grows.



Central City Weekly Register-Call for August 20, 1876 says:

During the Pike's Peak excitement silver spruce trees were hauled to Iowa from the mountains by ox team and have been doing well ever since. They are beautiful trees and are highly prized in prairie states.

Contributed by LOUISA ARPS



THE WEEK-END GARDENER

MOM and I can't agree on how to take care of our garden. She calls me a sloppy gardener and I think that she loses much of the fun of gardening because she tries to keep the yard as spotless as the house. She can't bear to see one dead leaf on the lawn, and she goes so far as to trim all the lower limbs off the shrubs. Maybe I am a little lazy, but I have more time to stop and enjoy the garden, and I think that there *should* be a certain amount of informality about a garden. A few dead stems of perennials are natural, and to my notion do not seriously detract from the beauty of a planting. I do think that a lawn mowed frequently adds much to the appearance of a yard.

Mom's calling. "Hey, You, don't think that you can run off without trimming those lawn edges." That looks like a lot of unnecessary work to me. I'll cut those edges back from under the shrubs so that I can mow the lawn right up to them and avoid all this hand clipping. I'm surely going to get one of those new hedge clippers and cut *that* monotonous job down a little. While I am at it I'll cut some dead limbs from the shrubs, and just as soon as the tulip tops are completely dead I'll get rid of them. I'm going to find some nice annual plant that I can set in between the tulips so it can grow up and hide them until they ripen.

I thought that we had several columbine plants at the end of this border. Oh, here they are, hidden away under the honeysuckle bush. How that plant does grow. I'll get my clippers and cut it back to let the columbines have a chance. I guess that I'll go all over the yard and cut back things that are overgrowing nicer plants. A garden sure doesn't "stay put." You must be everlastingly cutting back or taking out the rank growing things and coddling the tender ones; but that is the price we must pay to have all these exotic things in our garden. Nature is always striving to regain her balance—encouraging those plants that fit the place and eliminating those that can not adapt themselves.

TREE CARE IN LANSING, MICHIGAN

(FENNER PLAN)

Being the second half of Carl Fenner's talk given at the Rocky Mountain Horticultural Conference February 2, 1948.

PRUNING

TREES are pruned systematically, street by street in rotation. We aim at a four-year rotation. Special pruning requests are denied, unless the condition of the tree demands attention to prevent injury to persons or property in the public street. Trees are pruned for clearance and vision. If we could prune every year we would not prune so high.

Tools used on trees known to be infected with a contagious disease or on trees that indicate possible presence of disease by characteristic discoloration of certain sapwood areas are disinfected with wood alcohol immediately after use.

All dead, diseased or structurally weak limbs are removed. Occasionally it is necessary to prune misshapen trees to restore a semblance of balance. In the pruning of young trees the growth habit or form for that species is taken into consideration in order to help the tree into its normal characteristic shape.

REPAIR

Trees injured by storms, horses, children, motor vehicles, girdling roots, etc., are given prompt treatment according to individual needs. Persons responsible for injury of trees are assessed the costs of repair.

The edge of the wound is cleaned with a sharp knife and shellacked. The whole wound is shaded from the sun by a sun shade frame covered with burlap, so that the delicate cambium layer will not dry out. In two months the cambium begins to thicken into bark. Three years later there is complete coverage of wound with

normal bark developed simultaneously over whole surface.

The symptoms of girdling roots are yellow and thin foliage. Roots have to be removed before injury is fatal and the tree restored by a helpful program of soil fertilization, cultivation and watering.

Street sidewalks which have been raised by tree roots to a height dangerous to pedestrian traffic are repaired or replaced by the City Public Service Department upon recommendation of the Forestry Department without cost to the abutting property owner. When trees are good specimens of standard species the roots are carefully pruned and new walk sections are *curved* around the tree base to allow for future root growth. In case of undesirable varieties, the adjoining property owner is urged to allow the removal of the tree and its replacement with a standard variety.

A tree in natural forest floor conditions has plenty of water, air and food; rainfall is caught and held by decaying material. In the city the leaves and dead branches, which should decay to become tree food, are removed. Street trees are surrounded by paving and the hard surfaces shut out water, food and air.

Practically all street trees would benefit greatly from feeding. However, due to the expense involved, only certain classes of trees are given this type of assistance. To qualify for the feeding process, trees must come under the following classification:

a) Tree must be very plainly in need of feeding assistance but not so far gone as to be hopeless.

b) Tree must be standing alone or a standard planting distance from other trees at the location in order that it may have every advantage to regain and maintain good health. Crowded trees are not fed.

c) Tree must be of a variety known and recognized to be satisfactory and desirable for street use.

SPRAYING

The spraying for the control of insects and diseases is accomplished according to the spray schedule prepared for use by the Forestry Division. This schedule states pests to be controlled, time to apply spray, formula of material, etc.

Adequate precautions are taken to prevent spray materials from falling onto vehicles, houses, lawn furniture, etc. When it is evident that sprays drift onto buildings, it is advisable to wet the building thoroughly immediately before and after spraying. Sulphur sprays are not used near painted buildings as the sulphur combines chemically with the paint to the detriment of the latter. Dormant sprays are applied only when the temperature is above 40 deg. f. and probably will not fall lower than 40 deg. during the following night. Night spraying is preferable when feasible because traffic during daylight hours slows up operations.

REMOVAL

Street trees may be removed by the owner of abutting property on written permission of the City Forester under the following circumstances:

To allow installation or widening of driveway; if tree is of the "weed variety" or is dead and owner does not want to wait until City can make removal; if tree, although it is of an approved variety, is crowding other more valuable or better located tree or trees to the point of injury.

Consent of the owner of the abutting property is required for the removal by the City of *all living trees*. The City removes street trees for the following reasons and purposes:

a) Dead and decayed trees.

b) Trees of species that are known to be unsatisfactory for use as street trees.

c) Trees of all species that are planted too close together to allow space for proper and normal development of top and root systems. Under this classification all crowded, misshapen, undesirable and weed trees on a particular lot frontage must be removed. In other words, the city will not remove an inferior tree and leave other inferior or weed trees standing on the same lot frontage.

In the operations a gasoline power saw is used. Some of the wood can be utilized in park picnic stoves. Occasionally a log is found that is suitable for sawing into lumber at a local mill.

During 1947, 475 trees were removed at average of \$30.00.



APRICOT SHERBET

For that siesta you should take before growing too tired in the garden. Prepare at any odd time and have in the icebox when you need a lift. Easy to make. It's horticultural—it's made from lemons, oranges and apricots.

2 1/2 cups of water

1 2/3 cups granulated sugar

Boil together about 20 minutes and cool. Add juice of 2 1/2 oranges, medium size. Add juice of 2 1/2 lemons, 15 halves of canned apricots, run thru a sieve. Freeze. When slightly congealed, add one well-beaten egg white. Finish freezing.

I remove tray from icebox frequently and stir sherbet to keep smooth. Very delicious.

HELEN FOWLER.

THE GOOD EARTH

THERE are many reasons for preserving intact the remaining remnants of our American wilderness. Basic to an appreciation of even the most "practical" of these reasons is a respect for Nature and for life in all its forms and for the earth that gives rise to them—a sense of the mystery of creation, reverence in the presence of whatever is beautiful or grand.

Liberty Hyde Bailey once wrote a little book called "The Holy Earth." Pearl Buck has made familiar to us the phrase "the good earth." In such titles, more especially in the prompt recognition that they are good titles, lies the implication of an inherent and proper human respect for the earth itself and for each and all of its creatures and creations.

The great principle of Christian philosophy is respect for human responsibility, for each individual in his own right. One is not necessarily a pantheist if he extends this principle of personality not only to all human beings but to each squirrel and deer, to each elm tree and violet, even to mountain and cliff and waterfall.

Are game animals—mammals, birds, and fishes—always going to be protected merely because they provide sport for the sportsmen? Surely the trout and the deer and the grouse have some rights of their own because they like ourselves are parts of creation and because each in his own way has its place in the great scheme of things. So have the fox and the wolf, and the bear, the skunk, the woodchuck, the fringed genetian and the laurel, the waterfall and cliff and the forested skyline of a mountain range.

Until greater numbers of people have a respect for these other creatures and creations of the earth and a sense of responsibility toward Nature,

it will continue to be a great struggle to abate the polluting of streams, the defiling of roadsides with refuse, signboards, and litter, the destruction of a living wilderness.

Those who have this respect and this sense of responsibility are in their very nature conservationists because they feel instinctively the inherent dignity and worth of each and every part of a creation that has evolved to its present state of complexity and beauty in a process continuous since the earth's beginning. They realize that all creation is one and that man is a part of it along with the ant, the whale, and the ladyslipper.

Such an attitude is fundamental to a truly effective or long-time policy for the preservation of natural resources, of scenic values, and of the wild life both animal and plant that exists about us. It is fundamental to the perpetuation of a living wilderness. Whether our peculiar concern is forests, wildlife, or wilderness, our fundamental undertaking must be the propagation of this philosophy, or religion, or plain common sense—whatever you wish to call it. If we are to conserve—we Americans—we must be conservationists.

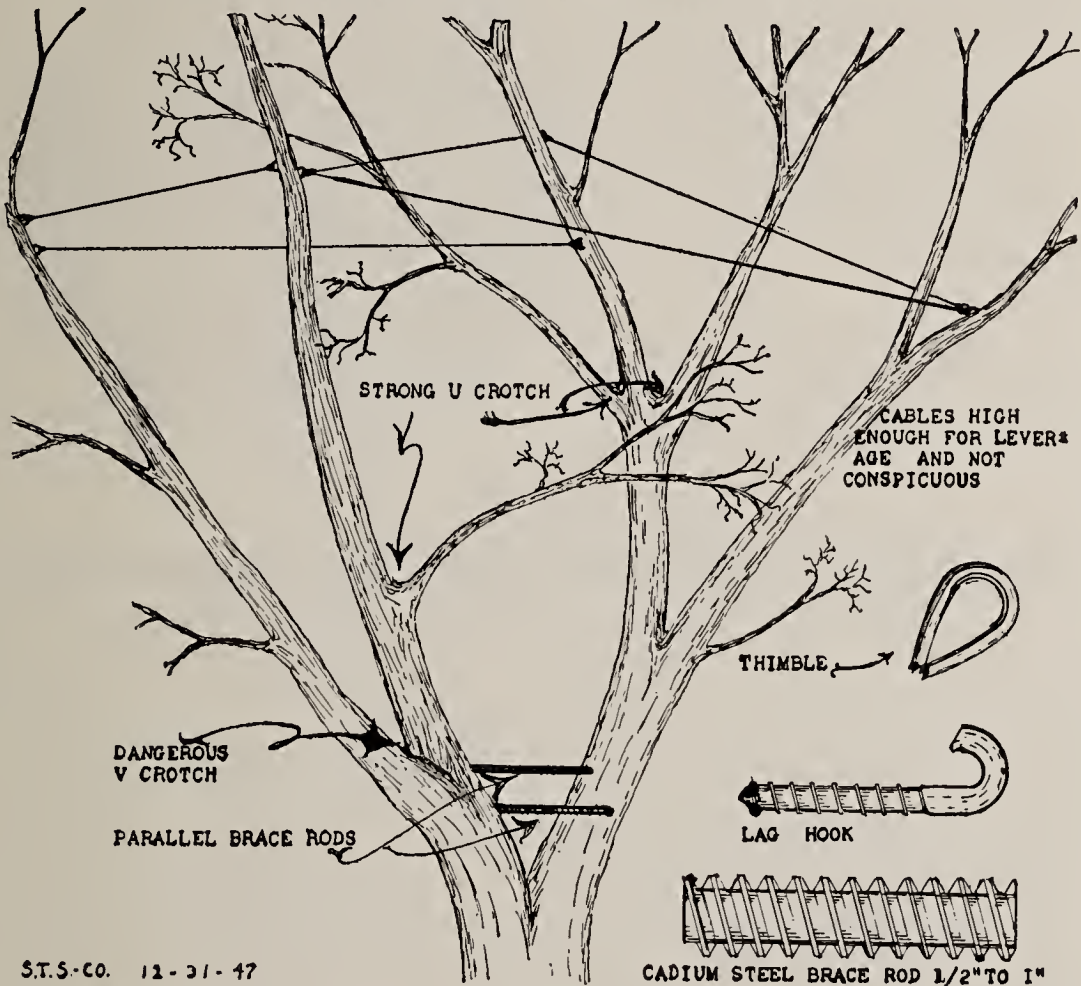
ELMER EUGENE BARKER.

Reprinted by permission from "The Living Wilderness."



Several plants of Firethorn (*Pyracantha*) were noticed in full brilliant fruit last fall. We once thought that it was impossible to grow this plant in Denver. All the plants we have noticed have come from Salt Lake City where the Firethorn is one of the most valuable shrubs. It may be that they have developed a hardier strain there which has a better chance of surviving in our climate.

TRIANGULAR CABLING & BRACING SYSTEMS AS INSTALLED BY SWINGLE TREE SURGEONS
USED & APPROVED BY NATIONAL PARK SERVICE



S.T.S.-CO. 12-31-47

CADMIUM STEEL BRACE ROD 1/2" TO 1"

TREE BRACING

is one of the essential phases of an intelligent tree preservation program. To achieve its fullest purpose brocing should seek to prevent rather than to correct damage.

An otherwise sound tree might require bracing for many reasons. Some of these are split crotches, tight V-shaped crotches, inherent weakness of species, prevalence of high wind, sleet storms, or other adverse environment conditions.

The Swingle Tree Surgery Company has had years of experience in safeguarding trees. Call our representative for advice without cost or obligation.

Swingle Tree Surgery Company

Member, National Shade Tree Conference

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BLADDERPOD

F. BINKLEY

The Bladderpod makes itself readily at home in a sunny garden, wherever drainage is good, and its pale yellow flowers are to my mind quite satisfactory, though not so showy, as the well-known *Alyssum saxatile*. This little mustard plant may be found in dry, sandy places, *Lesquerella Engelmanni* and *L. stenophylla* in the plains, and *L. montana* in the foothills and mountains. The rosettes of gray and white-hairy leaves are decorative in the winter garden. The flower clusters, on prostrate stems from eight to 12 inches, form a sec-

ond circle of yellow bloom about the central plant, from May on through early summer, and the inflated pods are interesting in the fall. Probably its best use is on a rocky slope (as I have seen it in Maude Reed's garden in Boulder), in the wild garden. One December I put several of the neat little gray rosettes into sand, in a bulb pan, and had the yellow flowers in the window garden for early spring.



What was that wild flower that you saw in the hills today? Look it up in the library and herbarium at Horticulture House.

**THE WEEK-END GARDENER**

WHAT is to be done in the garden today, Mom? Seems to me it should be in pretty good shape now. "Everything but the roses." O.K. I'll look at them. Yes, everything seems to be wrong with them. They are a job of themselves. Suppose that I take care of them and you look after the rest of the garden. That should be about 50/50. Well, first there are aphids on the buds. That's easy. I'll get the spray gun and give them a shot of Black leaf 40 with a little soap mixed in to make it stick.

Here is some damage that is not from aphids. The buds are deformed and have some holes in them. I don't see anything. The Oldtimer says that it is probably the work of snout beetles, and that they are hard to kill with any of the known poisons. I'm going to try chlordane on them and see if it doesn't keep them away. If I find any I'll try John Roberts Cypress cure on them. (Mash them between two blocks of cypress).

Now what is this powdery white stuff on the under side of the leaves of my climbers? I'll have to look that up. The book says that it is mildew and caused by watering late in the evening, and cured by dusting with sulphur or some such fungicide.

Here are some plants that seem to have the green eaten right out of the leaves in spots. Ah, there is a tiny transparent little slug doing it. The Old-time tells me that they are easy to kill, but work so fast that they should be treated at once. They are soft-bodied, so killed with a contact poison; are chewers and so susceptible to stomach poison, and are also easily killed by throwing ashes or dust on them.

You know, a gardener would have to be pretty smart to know all the pests that trouble roses. I guess that I'm just lazy and don't want to think these things out. I'll get some of that new three-way dust and just close my eyes and give them a shot of it once a week, and hope that it cures everything. I may waste a little dope but I'll be sure that there is nothing bothering my roses.

He Has No Enemies—So He Lost His Shell

RICHARD HEADSTROM

Reprinted by Permission from Horticulture

THE garden slug belongs to the same group of animals that includes the snail, oyster, clam, scallop, periwinkle and other seashell creatures found along the shore. All of these animals have one or two shells which serve as a protective covering but the slug lost its shell long ago and today has only a thin plate embedded in the mantle as a reminder that it, too, once possessed armor like its relatives.

The loss apparently did not greatly inconvenience the animal or prove much of an obstacle to survival. The slug, however, is not entirely without some means of protection although its means of defense do not seem to be particularly effective against an enemy. Speaking of enemies, I cannot recall that it has any. Its greatest source of danger is dryness, a condition which no slug can stand for long. Against this danger the slug secretes a thick and heavy mucus about itself. The gland which secretes this mucus is at the anterior part of the foot and as the animal moves along the slime or mucus is laid down as a smooth road along which it can glide. Thus the mucus also serves as lubrication.

The mucus is not only a protection against drying out but also serves as a protection in another sense. If a razor is placed in its path, the animal is able by means of the mucus to pass over the sharp blade without suffering the slightest injury. It is said that some slugs, after ascending trees, fasten the mucus to a branch and then let themselves down by stretching it out into a thread after the manner of spiders. I have never seen this done and cannot vouch for it.

One of our most common species, the gray slug measures up to five all Winter.

inches long and is gray with black spots and stripes on its upper surface. Unlike most mollusks which breathe by means of gills, but in common with the land snails, the slug breathes by means of a lung—or what serves as a lung. The external opening to this “lung” may be seen as a small pore on the right side of the dorsal surface. Also, like the land snails, the slug bears two pairs of tenacles and eyes and behind the base of one of the tenacles is the reproductive orifice.

Slugs are found for the most part in deeply shaded, damp places, under boards and rocks, in glens and chasms and in the dusk of cellars where they are most active at night. They are primarily vegetarians and scavengers on dead animals, especially upon earthworms, which they consider choice morsels. They are also partial to rotting cabbage leaves and it has been reported that some species will eat only vegetable food that has little or no chlorophyll in it, such as lichens and fungi. Certain small species that are found in our gardens are destructive in their feeding habits consuming garden vegetables, plant leaves and even meat left out in the cellar or pantry.

Slugs hibernate in much the same way and places as land snails. One would not think of them as especially hardy animals but they are hardier than they appear and in gorges and other protected places they seek their Winter retreats only after hard frosts. Each slug generally hibernates alone, excavating a nest-like hollow in the earth into which it crawls. Curling its body into a ball, it secretes mucus enough to cover it entirely. Those that live in our cellars are semi-active

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LAWN MAINTENANCE

By J. MELVIN EASTERDAY

A soil which will hold moisture must be at least ten to twelve inches deep. Obtaining such a seedbed is expensive, but it is better to construct a lawn once and have it permanent than continually to seed and reseed.

The success or failure of a lawn may be dependent upon the care given after planting. Mowing should leave not less than one and one-half inches of turf, and the clippings should be allowed to remain. Frequent mowing is better than allowing

grass to grow too long. One-half to three-fourths of an inch of growth between mowings is the maximum allowed.

Watering is a difficult problem and in many cases is more harmful than beneficial. When watering is necessary, a thorough soaking should be given. In order to prevent puddling, it is a good practice to move the sprinkler and later rewater the same area. The desirable penetration to a depth of four inches will demand long periods of sprinkling.

*From American Nurseryman,
March 15, 1947.*



THE WEEK-END GARDENER

HHEY Mom, do you remember that a week from today we start on our vacation? What needs to be done to the garden to get it ready to leave? Do you remember how bad everything looked last year after we came home? I guess that the boy had mowed the lawn once and maybe watered it once while we were gone, but nothing looked good except the weeds.

I believe that we should have started some time ago to train the lawn to get along with less waterings. If we would water it less often and more thoroughly it would stand neglect and the hot weather better. I'll give the lawn a mowing and trim the edges so that will not look so bad.

Two weeks is a long time to let a garden go without checking for insects and disease. I'll go over everything carefully and look for aphids, worms, beetles or yellowing leaves. I'm going to try some DDT on plants that are liable to have insects working on them. That has residual effect enough to keep things off for a couple of weeks. I hate to kill the good bugs too, but guess that can't be helped.

I'll get out the clippers and go over everything looking for dead limbs and lippy branches. Some of the shrubs that are just through blooming can have some of the stems taken out clear down to the ground. Some of the tulips are now entirely dried up and I can clean them up.

I see little weeds coming all over. If I get them now they will not have a chance to grow as they did last year. I believe that I'll put some peat over the perennial beds. It should help to keep things from drying out and keep some weeds from sprouting.

I'll soak everything thoroughly so it will have subsoil moisture enough to draw on to last the whole two weeks. O.K. Mom, I'll be in to supper right away. Shall I bring in an armload of Shasta daisies as I come? Let's take some of these fine lilies to church tomorrow. They are too nice to keep to ourselves.

OBJECTIVES OF THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION



TO PRESERVE the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit.



The Green Thumb

• AUGUST, 1948

IN THIS ISSUE

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A Bulletin of the
COLORADO FORESTRY AND HORTICULTURE
ASSOCIATION
Organized in 1884

TRY A COLUMBINE

J. R. BOTLEMAN

Our garden soil is a strange mixture of top soil and shale from the basement excavation improved only somewhat by manure and loam which I have hauled in and incorporated with it. It is not good garden soil as yet, but I have hopes, especially if my back endures long enough.

However some plants will take a lot of abuse and will thrive or at least tolerate poor soil such as mine. Years ago I filched a clump of columbine from the yard at the mother-in-law's summer home, brought it down and planted it in the shade where it thrived and bloomed and grew for several years, then I moved to my new residence and brought some of my old flowers along, among them the clump of Columbine. I did not exercise much care in transplanting, I just stuck it in the ground at random, but it survived and bloomed again only this time it was in the sun, and instead of the cool beautiful blue color, it had turned a dirty white. Last year I had to move it again and this time I separated the clump and put it in the shade. It was after blooming time so I have had no flowers in the new location, but it was still alive last fall, and I have no reason to believe that it will not survive the winter. So, if you want a hardy flower as well as a beautiful one, try the native columbine. I think it will repay you in direct proportion to the care and effort you expend on it, but please folks, give it a better chance than I did.

Unless you are extra careful you may be the one to start a fire that will burn over thousands of acres of valuable and beautiful timberland. IT'S UP TO YOU TO PROTECT OUR FORESTS.

ORCHIDS TO MR. ROBERT E. MORE

No one in Colorado has made a finer contribution to Horticulture than has Robert E. More, in introducing and ascertaining the hardiness, for use in the state, of new varieties of Evergreens.

His Arboretum, Glenmore, at Buffalo Creek, Colorado, has been given nation-wide appreciation.

Donald Wyman, director of the Arnold Arboretum of Harvard University in his bulletin on Arboretums and Botanical Gardens in North America speaks of Glenmore arboretum as an outstanding attempt of a private individual, to test conifers and their habits in a region where little has been done in this respect with ornamental exotics. This work carried on in the Rocky Mountain area at an altitude of 7,000 feet, where the annual minimum temperature is -25° to -35° F., promises much new information.

One of Denver's leading attorneys, student and author of many authoritative papers on horticultural subjects, Mr. More has long been a valued member, officer and director of the Colorado Forestry and Horticulture Association.

The association is greatly indebted to him for his wise guidance and for all the time so generously given by him to the furtherance of its work.

When you toss away a lighted match or cigarette, or leave a smoldering camp fire you are gambling with America's Scenery, her forests, wild life, soil and watersheds. Do your part to keep your forests green by taking no chances with fire this summer.

Cover Picture *Colorado Columbines*

Photo by Robert J. Neidrach.

ADVERTISING OR?

Last January we started to publish the Green Thumb monthly and to include advertising in its makeup. This was after the repeated requests by members and commercial firms. We planned to limit the space assigned advertising to 20% of the total, or 8 pages in 32.

The response was very good, and with the help of Mrs. Barbour this goal was approximately reached in the first six issues of the year.

Our advertising is now at its lowest in this issue. It will not pay for even half the cost of publishing.

We realize that this is the slack time of year for dealers in plants and garden accessories, but we feel that there are many products related to horticulture which might be profitably brought to the attention of our list of prospective buyers now.

We must either have more advertising or raise the money for publishing the magazine some other way. If we must pay someone a large commission to solicit advertising there will be little profit left to finance the magazine. If any member believes in the objectives of the Green Thumb, and knows of those who should advertise, they will be doing a great service to notify us. This is your Association and your magazine.

Last year enough sawtimber-size trees to build about 86,000 homes went up in smoke . . . farm woods, range and watershed lands were heavily damaged . . . scenic areas were marred . . . all as a result of carelessly tossed matches or smokes, unattended camp fires or improper brush and field burning.

John Q. Public—Yes, people like you and your neighbor—cause 9 out of 10 disastrous forest fires!

The Green Thumb

A Bulletin of the

COLORADO FORESTRY AND HORTICULTURE ASSOCIATION

Organized in 1884

GEORGE W. KELLY, *Editor*

MISS ALICE WOOD, *Assistant Librarian*

L. C. SHOEMAKER, *Treasurer and Custodian*

1355 Bannock St., Denver 4, Colorado

Phone TABor 3410

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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CLIMATIC DIFFERENCES IN COLORADO

C. H. WASSER

Associate Range Conservationist

*Extracts from paper read at Rocky Mountain Horticultural Conference, Denver,
February 3, 1948.*

Decorations by JERRY LYON, Commercial Artist.

COLORADO, astride the Continental Divide, and with a wide diversity in topography varying from the wide expanse of treeless plains, to low elevation deserts, to mountain valleys and lofty peaks, has not one climate but a remarkable variety of climates. Great differences often occur in short distances. Our local chief meteorologist writes that "Lamar and the summit of Pike's Peak differ by 35° F in mean temperature—a difference equal to that between southern Florida and Iceland. The average annual snowfall at Cumbres is 264 inches while at Manassa, less than 30 miles away, it is only 18 inches. One may travel from the warm valleys of the Western Slope, or from the great plains, to the crest of the Continental Divide and pass through as many distinct climates as one would in traveling from Virginia to arctic Greenland." This variety is due chiefly to differences in altitude, varying from 3,386 feet to 14,431 feet—a range of over 11,000 feet, although a range of latitude of 4° (37° - 41°) and topographic differences are partly responsible. Each of these distinct climates has native plants and crop potentialities peculiar to it.

"The climate of the plains is distinctly continental. Its general features are low relative humidity, a large amount of sunshine, light rainfall confined largely to the warmer half of the year, high day temperatures in summer and generally in the winter a few protracted cold spells." This is the weatherman's brief summary of the major features. Let us

explore it a little more in detail with regard to cropping potentialities and effects.

A lack of continuous snow cover is not mentioned in a weather summary but it is generally recognized that this factor makes the temperatures more severe on plants, as heat is quickly lost by radiation and the ground is frozen to a considerable depth for varying periods. The greater wind movement on the plains as compared to the foothills causes an increased evaporation, thus making precipitation less effective. Also wind causes drifting of topsoil where natural vegetation, crop stubble, stubble mulch or rough cloddy surfaces are removed by improper cultivation.

Plains Region Shelterbelts

Precipitation increases generally from the foothills to the Kansas border—varying from 12 to about 18 inches. This amount of precipitation, together with the prevailing temperatures, is considered insufficient for growth and reproduction of native tree species that grow in the foothills and the mountains. Such trees will grow, however, when proper cultural methods are applied. On lighter textured soils, shelterbelt plantings of drought resistant Ponderosa Pine, Rocky Mt. Red Cedar or Juniper, Pinon Pine, Chinese or Siberian Elm and Hackberry have survived by planting in wide-spaced rows which are cultivated to reduce grass and weed competition. Fallowing prior to planting and planting seedlings in contour furrows appear to aid by supplying more moisture. Close spac-



ing in the rows cuts down soil blowing and makes a more effective young shelterbelt. In swales, naturally sheltered from the wind, where runoff water collects or in the shelter of previously established belts, some hardy fruit trees and dwarf fruit-bearing bushes or trees appear to offer some variety on the so-called treeless plains. It is significant that like the rancher who is compelled to use either native grasses or the equally hardy and drought resistant Russian or Siberian equivalents, the forester or horticulturist must use native drought resistant trees with a slow growing habit or shrubs of dwarfed habit or, if exotics, from similar climates — Russian, Siberian or Mongolian in origin. Cultural operations must of necessity conserve moisture and combat excessive wind movement.

Foothills

“The foothills climate differs from the plains in having less wind movement, less severe change in temperature from day to day and a narrower annual temperature range, with the winter months notably warmer”, says the meteorologist. Therefore the climate of the foothills is less severe for plant growth than on the plains. The temperature decrease from the plains to the foothills is less than might be expected on the basis of altitude, due to gentle mountain and valley breezes and occasional chinooks. Extreme maximum temperatures, however, are closely related to altitude with tem-

peratures above 100° F. not infrequent in summer below 5,000 feet but rare above this altitude. While the eastern slope foothills still bear the marks of a variable continental climate, the Western Slope section, especially the lower valleys, exhibits comparative uniformity in weather, day to day. Severe cold waves that are common on the plains are infrequent or quite rare in the western part of the state.

The Mountainous Climates

About 40 per cent of the area of the state is above 7,000 feet elevation. Except for the large mountain parks and the area above timberline most of it is forested, or, as has been said—“the second mile up is forested.” As we ascend the great heights a variety of forest types is encountered—the open Ponderosa Pine forests, the dense Lodgepole Pine, often in dog-hair stands when regenerated after fire, and the subalpine Engelmann Spruce-Alpine Fir forest which tapers into an elfin wind-forest at timberline. Certainly we have evidence of variety in climates.

In general, mean annual temperatures are $2\frac{1}{2}$ -3° F. colder for every rise of 1,000 feet in elevation in the mountains. This usually means a delay of about 13 days in start of growth or flowering of a particular plant at 6,000 feet as compared to one at 5,000. Therefore colder temperatures and shorter growing seasons result with increasing altitude.



Thus above 10,000 feet frost may be expected every month in the year—quite a contrast to the 180-day growing season at Grand Junction or in Southeastern Colorado. Such temperatures, 35° F. or lower, largely rule out crops. In regrassing and reforestation it is a slow process to get anything, even natives, established and up to maturity.

It is generally believed that precipitation usually increases with altitude. However, this is not strictly true here. While the summit of most of the peaks receive an annual precipitation of 30-40 inches as contrasted with 10-15 inches on the plains, it must be remembered that Colorado is in the belt of the westerly winds and west to east storm tracks. This fact accounts for two notable exceptions—reduced rainfall on the leeward side of the mountains and rain shadow deserts in the intermountain valleys and parks. The moisture laden air, in being forced upward to pass over the mountains, condenses on the windward side of the mountains, is relatively free from moisture upon reaching the leeward side, heats upon descending and does not condense what little moisture there is in the lower mountain parks and valleys. Hence our large mountain parks have a semi-arid climate, although cool, and we find desert shrub instead of trees in North Park, Middle Park and the San Luis Valley. In South Park the scant precipitation comes largely during the growing

season in contrast to the more uniform distribution throughout the year on adjacent mountain slopes and the resulting vegetation is predominantly grassland or meadow.

Another Climatic Variation

Another exception to temperature and timber type correspondence is the effect of exposure upon insolation and moisture on particular sites. The foothill belt illustrates this point. From the edge of Denver one can look at the foothills and note belts of vegetation—the south-facing slope of ridges covered with a mixture of shrubs and grass, the north-facing slope covered with timber. Higher up, open Ponderosa Pine is noted on the south slopes and Douglas Fir on the north slopes. The south slope receives the full benefit of the sun's rays throughout the day. This site is warmer and because it is so heated the moisture is less than on the north slopes. The north slope being literally in the shade of the mountain is cooler and less evaporation takes place, leaving more moisture available. These exposure differences cause the north slopes to have climates that may be the equivalent of those found as much as several thousand feet higher in altitude. This shows up also at timberline with trees giving way to alpine tundra at about 11,000 feet on north slopes as compared to 11,500 to 12,000 on the south slopes. There is a practical application as well: fruit trees planted



at the base of north slopes of intermountain valleys do not bloom as quickly as those on south slopes and may therefor escape the damage of late spring frosts.

Obviously for most of this area, plantings must be of native species which are known to be adapted. That is why it is better to choose cabin sites that can take advantage of the natural setting, with possibly a little transplanting or clearing. Reforestation, which is costly at best in comparison with natural reproduction, may be used in some instances for watershed protection on old burns, for recreational purposes occasionally, or for restocking clear cut or bushy areas without seed trees. In any case the adaptation of materials to local climatic and other site conditions is essential. Shade tolerance is an item that needs careful attention. Plantings of Douglas Fir and Engelmann Spruce are more successful under Aspen and on north slopes or, lacking that, planted next to boulders or old stumps. Lodgepole Pine or Ponderosa do better when planted in the open. Grass cover especially competes with seedlings for moisture. Where plantings are attempted the deep hole method, which removes some sod, is better than the slit method of planting. A small hole on contour furrows may be even more economical on heavier soils.

PENSTEMONS

By FRANCES BINKLEY

Penstemons have a place high on the list of Colorado wild flowers for the garden,—a vast race with a great variety of qualities to offer. Colors range through blues, lavendars and pinks. There are tall species, as showy as the snapdragons or the branching larkspurs, and shrubby and alpine species as well. It is not difficult to recognize and gather the seeds in late summer.

Plants of many Penstemon species stand transplanting well. Their preference is for sunny, well-drained spots, with light shade available. I have had *P. angustifolius* on an east slope, at the foot of a bank. It is small enough for the rock garden, and the blue flower is indeed a heavenly color as suggested in an alternative name, *P. coeruleus* (nomenclature in the Penstemons appears to be far from established.) *P. secundiflorus*, a lighter blue, grows as a sturdy, branching plant, two feet tall, in open, sunny fields and along roadsides. The flower is showy and it is a promising species for the border.

Seeds of sixty western species, of varying merit, have been offered. One of the pleasures of growing the Penstemons might be the adventure of discovering which of those sixty species may become as useful in the garden as Garnet and Firebird, varieties already established there.

INTERESTING CHILDREN IN GARDENING

By CARL W. HERZMAN

Denver County Agricultural Agent

IT was a real pleasure to be asked to prepare an article for the "Green Thumb." Since this is my first appearance to you through your magazine, I feel that it might be well to digress a few moments in explaining my position and the place of the Extension Service in Denver.

As you see above, my title is County Agricultural Agent for the City and County of Denver. I have been asked so many times since taking over this position as to what a County Agricultural Agent did in Denver—that I am rather on the offensive whenever the question is asked and I have some stock answers well in mind.

For the first part, I think it is well to explain that regardless of how you or I feel about Denver, it is just an overgrown cow town. It is primarily an agricultural center, and, as was so amply outlined in a recent talk by L. M. Pexton, Manager of the Denver Union Stock Yards, removal of all the agricultural interest, and the related industries, businesses, or professions, depending in turn upon agricultural interests would leave us with a town about the size of Alamosa.

Also, I want to point out the fact that Denver has more land owners—I am speaking now of farm and ranch lands—than any several other coun-

ties put together. These are of course, non-resident land owners. Too, they are, for the most part, a high type of people and own agricultural land because of their interest in farming or ranching. By pooling such people together, into organized groups in Denver, according to their special interests, I feel that a great contribution for the good of agriculture in the whole state could be made. This is something which I hope to do.

The Extension Service is primarily an educational organization. In the past, these educational duties have been carried on mostly with rural people, particularly farmers and ranchers themselves. It seems to me that we now have a big job of education with urban people. I mean by that, educating urban people to realize their state in Agriculture. There is no need to point out that we are all dependent upon Agriculture for our food supply. With our increasing population it is more important than ever, that we realize the need for conservation of our productive resources. The increased productivity of those resources and the best use of those resources is highly important to us. In fact, it is safe to say that it is more important to city dwellers than it is to the farmers themselves because they can



always produce enough for their own food supply, whereas, the city dweller cannot. It was pointed out in a news broadcast by Alex Dryer just the other morning, the speed with which our population is outgrowing their food supply. It is serious and it is time everyone started taking it so. We have all heard about conservation but I fear that too many city people have just taken it for granted that it did not concern them. This group, probably is different than many, and no doubt realize these things, but you can help the situation greatly by spreading the gospel, so to speak.

Now as to more particular things you are all familiar with—problems of gardening, both vegetable and landscaping, which confront us in Denver; problems of varieties—insects, disease, and so forth are probably more than familiar to all of you. We are also here to do all in our power to assist with such problems.

When we speak of agriculture, we think first of crops. In Denver, the same as in rural areas, we do have a crop and it is our most important crop, if you will allow me to speak of it in that way, I mean our crop of children—our boys and girls. In that respect, we have never had a greater crop than that of today in rural areas. These boys and girls thru 4-H club work, are one of the most important phases of the Extension Service activities, whether in rural or in urban areas. Denver is also unique in that it is one of the few urban areas in the U. S. which has an Extension Service office and where 4-H club work is carried on.

In an urban area, however, we are somewhat limited as to the projects we can offer our boys and girls. We do offer gardening projects, including both vegetable and flower, and home beautification projects. In fact, these projects are the ones which we are

attempting to emphasize the most among those that we offer, for we feel that they are of the most importance, not only to our children but also the city.

The readers of this magazine, whose interest in Horticulture is shown by their subscription to it, are much more aware of the value of such activities for boys and girls than our average urban citizens and it is with this realization that I feel that your group can do more than any other in promoting such activities among our young people.

I need not explain to you the personal value which our children can receive by working on such projects as gardening and landscaping, you are already aware of this value from your own experience. I need not review the greater understanding of life, the greater appreciation of growing things the greater appreciation of natural beauty which our children can obtain, you already know about them.

I would like to, however, say a little about the value to our city which increased interests in such projects can bring about. I was interested, at the first session of a landscaping class, which was conducted at the Horticulture House, in a statement made by the instructor as to the lack of flowers around the homes and in the yards of Denverites. This dearth of flowers is due to the lack of knowledge and interest of our Denver residents. What better place could there be to increase this knowledge and interest so that in the future such statements could not be made about our city, than by starting now to develop the interest and knowledge of our boys and girls in flower growing? Almost the same statement was made regarding the lack of any planned landscaping around most of our Denver homes. The same reasons no doubt were responsible for this lack. What

better way would there be to beautify our city homes than to promote the interests and knowledge of our young people.

Denver, while considered a well forested city, has had very recent and severe proof of the improper management of this valuable asset. The lack of interest of our citizens, as a whole, during the past has prevented any modern program from being promulgated. The increased interest of our young people and the realization by them of our situation and the importance of good management could soon correct this program.

I would like to quote from the article by Paul Nesbit, which appeared in a recent issue of the "Green Thumb" on "Reasons for Nature Training for Children." "As we get older we many return more easily to those activities in which we engaged as children but it is more difficult for us to undertake new activities which have been foreign to our experiences." I use this quotation just to emphasize the reasons for interesting children in gardens, as it means such a good influence on their adult life.

We know that the Colorado Forestry and Horticultural Association as a group of individuals, are interested in children and are already taking an active part toward promoting the knowledge of these children in nature and natural things. I am sure that when you consider our program as against the needs which you can see in Denver, you will find that it would be well to assist in it. And how may you do so? Many of you of course have children of your own, your friends and neighbors have children, with all of whom you have some good contact. Enthusiasm on your part, when speaking of our program, will I am sure, aid us to obtain more members. We are always in need of good leaders for clubs in these projects.

You folks who have the knowledge of these things have excellent qualifications to be among our leaders. We in the Extension Service, appreciate the value of this organization and also appreciate deeply the excellent association we have had with your group in the past and hope to enjoy your increased support in the future.

EDWARD WILSON: NATURE-LOVER

By GEORGE SEAVER, NEW YORK
E. P. Dutton and Co.

And Nature, the old nurse, took
The child upon her knee,
Saying, 'Here is a story-book
Thy Father hath written for thee.

'Come wander with me (she said)
Into regions yet untrod
And read what is still unread
In the manuscripts of God.'

So he wandered away and away
With Nature the dear old nurse,
Who sang to him night and day
The rhymes of the universe.

And whenever the way seemed long,
Or his heart began to fail,
She would sing a more wonderful song,
Or tell a more wonderful tale.

Longfellow.

The above verses are the key to this delightful book. It is largely made up of the diaries and letters of Edward Wilson and tells of his earlier life as well as of the South Polar expedition with Capt. Robert F. Scott with whom he reached the Pole and with whom he died on the heroic struggle back.

The beautiful color plates and nature drawings add to the charm of the book. As an inspiration to young people "Edward Wilson: Nature-Lover" should be placed high on the list of required reading. "We see distinctly only what we know thoroughly" and Edward Wilson was that rare combination of artist and man of science.

ALICE WOOD.

GLIMPSE OF HORTICULTURE IN THE FAR EAST

GEO. BEACH

FOREIGN travel in khaki clothes, leaves much to be desired, from a tourist's point of view. But army travel in foreign lands, for all its limitations, is better than no travel at all. And with Uncle Sam buying the ticket, GIs should be grateful for whatever "touring" they got.

Probably as universal an observation as any is the fact that people in other parts of the world seem to appreciate flowers far more than we Americans, despite our vaunted pride in our high standards of living. I've seen a Frenchman dispossessed of his home by the army in North Africa, return daily to care for the garden that it might live and bloom despite soldier's neglect. I've seen an Indian bearer pick the first phlox of a tent-side garden, for an American nurse (and wondered if "mem-sahib" realized what the garden meant to him). Even the boy who delivers your morning newspaper in India will place a flower lei around your neck on Christmas morning. And I've seen a starved and tattered Chinese clutching to him, in shelter from a chill February wind, a "forced" branch of peach blossoms he was taking home.

Few soldiers had the opportunity of association with the upper classes of foreign people in their Army travels and for that reason missed much in the way of seeing and learning about fine gardens. Trips into civilian areas were infrequent for most of us. And the massive walls that surround practically all buildings, both public and private, means that most of us got, as my title implies, only fleeting glimpses through the grill of a gate or over the top of a wall as we flew along those narrow

and bumpy streets, setting our teeth against the jolting of an Army truck.

From the air one had a much better perspective of the entire picture, but, of course, little of detail. When you see from a plane window in a single day the Garden of Eden, the River Jordan, the Dead Sea, Jerusalem, Bethlehem, Suez, Cairo, the Nile, the Pyramids, the Libyan Plateau, Benghazi, the beautiful blue Mediterranean and Algiers with its palms and peculiar well-heads, you are poorly prepared to describe the horticulture in anything more than its broadest outlines.

North Africa, around Oran, reminds one very much of the vegetation of California between San Francisco and Los Angeles. I knew of a letter from Oran, however, which the army censors all but obliterated because the writer listed plant species of his area which evidently, by their association, disclosed his location.

Mention of mail censoring recalls an interesting story. A number of censors were discussing one day in India the lurid tales that soldiers were sending home about the wild life in which they were living. "Why," said one, "I read a letter today telling about a tree 1200 feet in circumference!" "Well, at least *that* writer was telling the truth," I said, "for I have seen that tree myself." It is the world's largest "banyan-tree" in the Royal Botanic Garden, Calcutta. Baileys Encyclopedia describes this particular tree and Mark Twain wrote something about it.

It was tantalizing to have only a short visit to the Royal Botanic Garden. I saw but briefly, a small part of its 275 acres. From the water

landing on the Hooghly River, Oreodoxa Ave. leads into the Garden. This avenue is so named for the royal palms which line it. Alternated in the row are old and young royal palms with the distinctive bulges in their trunks and crotons between the trees. There are many ponds, acres of turf and curving drives, a palm house, an orchid house and a fern house. Despite the fact that Calcutta was bombed and municipal parks are criss-crossed with air-raid trenches, the Royal Botanic Garden is fairly well maintained. Most widely known of its attractions is the aforementioned gargantuan *Ficus benegalensis*. In 1942 it was 172 years old, had 808 aerial roots, the highest of which is 82 feet, with the circumference of the crown 1175 feet. To some the tree is a fraud since its original trunk is decayed and the forest of aerial roots give little of the orthodox appearance of a tree.

Knowing that cobras are to be found in the tall grass and bamboos around the tents of his camp, perhaps dulls one's appreciation of plant life somewhat. My general impression of the vegetation now, several years after leaving it, is that our camp was mostly jungle grass and bamboo with a pink-flowered "sensitive-plant" *Mimosa* along roadsides and a considerable number of mango trees with a brown and yellow spotted spray orchid growing in them.

Flying the "Hump" one again sees too much scenery in a short while to know anything of it in detail. From Chauba, amid the tea gardens of Assam, over Myitkina to Kunming, my impression of the mountains was that they were mostly covered with broad-leaved trees instead of the conifers we Americans expect at such elevations. The Hump flight gives glimpses of the scenic convolutions of the Stillwell Road and of tiny

farms terraced up mountain slopes, to the very tops of them.

There are *Eucalyptus* trees in and around Kunming. The rapid growth of this tree must be its most valuable asset, for in this part of China thousands of acres are nearly denuded of their natural cover of pine trees to supply the tremendous needs of the people for charcoal—the chief fuel. This southwest part of China has long been poor agriculturally and, of course, war has aggravated the condition.

The important winter crop on the rice-paddies is a broad bean they call horse beans (used more for human than for animal food).

Sanitary arrangements are sketchy or non-existent so there is an all-pervading and unpleasant odor. One early spring day I thought I noticed a faint but pleasant odor to the countryside. In a few days it was actually strong enough to overshadow the ever present unpleasant odors. I found this perfume was from a tiny *Primula* like our *P. malacoides*. It is a prolific weed in the endless miles of winding, jig-saw patterned dikes in the paddy fields.

A locust like our Black Locust is rather common along the roadsides, as are several species of Barberry and a rose like *Rosa wichuriana*. The Chinese pick the blossoms of locust by the bushel and take them home for food. And little girls make designs of the double white wild rose and wear them in their shiny black hair.

The common annuals and perennials of American gardens were in bloom in January around our quarters in China. Although Kunming's elevation is 6,000 feet, the more southerly latitude makes winters mild.

The land and vegetation around Kunming is similar in many ways to our own foothill region. However, azaleas grow wild there and camellias

are planted out of doors on the campus of Kunming University.

Fortress-like walls surround what gardens there are, so here again one gets only glimpses of the far-eastern horticulture, from the roadside. They have many of our species, and since Marco Polo's time the rest of the world has been getting theirs.

"East is east and west is west"—the twain have come together, but have they really met?



ROSE SNOOT BEETLE

MRS. G. R. MARRIAGE

Isn't this the one rose enemy hardest to kill? Haven't we refused attractive dinner invitations just because we had to be ready to catch or shake off the nasty little pest when

he appeared at sundown? His needle snout is so slender that we couldn't plaster enough poison onto the exterior of our rose buds to give him a lethal dose.

Now we have got him. He succumbs to DDT. We find that he can be knocked cold by dusting with a mixture of equal parts 50% DDT powder and arsenate of lead. This is most effective when he meets his friends at those conventions on the fattest rose buds early morning and late evening though the residual effect of DDT may carry on the job indefinitely. Arsenate of lead may not be necessary, we added it to reduce the possibility of too strong DDT. We find that a DDT of less than 50% isn't much good—even against house flies.



THE WEEK-END GARDENER

I WONDER what the matter is with my garden. It was so bright and full of color last spring, but now it is dull and uninteresting. The Oldtimer tells me that I should have planted more annual plants like zinnias and petunias. He says that I should also plan on using more of the late blooming shrubs like Froebel's spirea, Sorbaria, Leadplant and Elderberry. I know that there are more late perennials like Phlox and fall asters that should help to fill this July-August gap. I'll make a list of the things I need now, and order them next spring.

This seems to be a difficult time to water properly. The sun is so hot that it dries things out in a hurry. I see now why the Oldtimer told me last spring to water things more thoroughly and not so often, so that they would develop deep root. Things sure need deep roots now when the weather is so hot.

I appreciate now the careful planning for shade in the front of the house. That tall-headed tree at the southwest corner of the house keeps the house several degrees cooler and helps to frame the house. I wish that we had planned as thoughtful for proper shade in the rear. When we really want to use the platform to sit on out in the open the sun shines on it and it gets unbearably hot. If I planted a tree to give us shade there it would hide our best view. Hey, Mom, how about planting a low spreading tree there like a Cockspur Hawthorne? That would give us the shade and not hide the mountains.

The roses are not doing as they once did. I'll bet that they are getting too much shade. I'll cut out that honeysuckle bush and the Box elder tree that came from seed. That should make a lot of difference in my rose and perennial bed.

A LATH HOUSE FOR COLORADO

By MYRTLE ROSS DAVIS

I BELIEVE that everyone who lives in Colorado and takes gardening seriously should have a lath house. Our dry air and very hot sun are very hard on many plants which grow very readily in a more moist climate. I have found that a lath house is the answer for growing these partial-shade and moisture-loving plants in Colorado. Also, during our hail storms, I can rest assured that my Begonias and choice plants that are in the lath house will not be damaged.

My lath house is 8 by 16 feet, and built in what was formally a useless corner. It is made on a two-by-four frame, with lath covering running up and down on the sides and north and south on the top. The laths are spaced the width of one lath to give half shade. I cover my lath house with cheese cloth because I have found that Tuberous-rooted Begonias and other plants need the extra shade, and the cloth also helps to hold in the moisture on hot dry days.



Most of the space in the lath house is given over to the Tuberous Begonias during the summer. They are started in-doors and set out in the lath house after all danger of frost is past (about May 15.) There they thrive in the cool, shady, moist location.

When fall comes, I allow the Begonias to frost down, and then I dig and clean the tubers before a heavy freeze comes. They are then stored in dry peat moss in a cool place in the basement. This way they get their needed rest, and are out of the way all winter. In the early spring, they are ready to start growing again.

After the Begonias are moved out of the lath house in the fall, I move in the tender perennials such as Dianthus, Chrysanthemums, and some daisies, which have a difficult time surviving our very dry winters. Foxgloves and Cantaberry-bells and other bi-annuals like to spend their only winter in a lath house also.

I try to keep the soil of one corner of my house a little on the acid side so that I can raise some of the eastern woods flowers, which are so rarely seen in Colorado. I grow Hepatica, Blood-root, Trillium, Dog-tooth Violet, Wintergreen, Jack-in-the-Pulpit, and Helleborus successfully in the lath house.

The lath house is an ideal place for house plants during the summer. They all perk up and put on new growth as soon as I put them out there for the summer. I either bury the pots or place them on shelves along the side, according to the amount of water they require.

The month of August is the best time to start perennials from seed. In the open they dry out, or if they



are covered with glass or burlap, they have a tendency to damp-off and the loss is great. If they are planted in flats, and the flats are placed in the lath house, they are protected from the hot-drying sun and they come along fine without extra covering. They are also protected from the damping-off. After the weather cools off, they may either be set in their permanent location in the garden, or allowed to remain all winter in the protection of the lath house.

I am sure that as long as I garden, I shall never be without a lath house. It has become a very essential part of my garden, and I couldn't get along without it.



Mr. A. J. Teese, instructor in the only strictly horticultural college in

Australia, would like to correspond on horticultural matters with someone particularly interested in ornamental plants. He is also interested in getting articles dealing with plant breeding and modern methods and chemicals used in plant propagation, and would like to know about magazines printed in this country which deal with horticultural matters. He is especially interested in the lilioms and currently experimenting with the multipleblossomed polyanthus (primroses) and is anxious to get the blue varieties started. Anyone any suggestions on these? His school, which covers 32 acres of land, is only about three miles from the heart of Melbourne. His address is:

12 Pembroke Street,
Surrey Hills,
Melbourne, Australia.

THE RECREATION STATE WITHOUT A STATE PARK!

By HAROLD W. LATHROP

Special Representative, National Recreation Association

COLORADO is nationally recognized as an ideal tourist vacation state. True, it has its magnificent mountains with snow-fed streams, National Parks, National Forests, municipally-owned mountain parks, and a few roadside areas. The State Government of Colorado, however, has done practically nothing to provide facilities, which are normally expected and furnished in state parks.

The first state parks of the nation were established in New York and Michigan, sixty-three years ago. Why Colorado with all its natural beauty remains the only state in which no such areas have been established, either for their own citizens or the multitudes of tourist guests is a \$64 question.

A study of a recent tabulation prepared by the National Park Service, covering expenditure data for state park agencies in 43 states is quite revealing. Arizona, Delaware, Nevada and New Mexico do have some state parks, but did not report. The population of the 43 states covered in the survey is estimated at 127 million persons. During 1947, their state governments expended for state park purposes, \$26,618,830, for an average of 20.9c per capita. Such amount was practically equally divided between maintenance and operation, and new parks and improvements. The total available funds from legislative appropriations, revenues, gifts, endowments, etc., were \$36,812,516, representing 31.8c for every man, woman and child living in the 43 states. Thus, every state except Colorado has recognized that state park recreation is an important function of state govern-

ment. They have not been satisfied with only the usually-provided fine opportunities for recreation in Nation, County and Municipal Parks and National Forests. They have recognized the need for supplemental recreational facilities within an easy day's reach of their citizens. They also appreciate the value of having outstanding scenic and naturalistic areas, adequately developed, as an added inducement to lure out-of-state tourist vacationists and recreationists.

The facilities in the National Forests of Colorado can accommodate an estimated 15 thousand people at one time. It may be assumed that the National Parks and municipal mountain park facilities might accommodate an equal number. Such limited

*Snowmass
Lake
and
Mountain
from
Buckskin
Pass*

Photo by
Bernard
Frank



provisions must be grossly inadequate to satisfy the demands of Coloradoans and their tourist guests on a summer weekend. Only a small percentage of Eastern Colorado citizens are able to take advantage of the recreational facility opportunities provided.

There appears ample justification for Colorado providing such facilities as picnic grounds, camp sites, nature trails, beaches, shady recreational grounds, camps for organized groups and other types of recreation, generally afforded in state parks. A definite need exists for such facilities in the Eastern One-Third of the state, and on the Western Edge, as well as many in the Mountain areas.

The so-called Lake States of Michigan, Wisconsin and Minnesota have vast acreages within National Forests, but they also have sizeable state park systems; likewise, the Pacific Coast States have not been merely satisfied with the recreational opportunities made available by Federal Agencies.

They have set aside numerous areas, outstanding for their scenic, scientific or natural values, for the perpetual use of their citizens and tourist visitors. Texas is planning to expand their elaborate pattern of roadside parks from 600 to 800, to supplement their fine system of state parks. Kansas has developed recreational areas adjacent to many of the man-made lakes and reservoirs. Oklahoma has done likewise, in addition to setting aside several fine naturalistic areas.

As an indication of the recognition given to the importance of state parks in a few of the states, which are promoting tourist vacations within their boundaries, the following tabulation, based on the 1940 census, but using the 1947 expenditures, shows the outlay in cents per capita.

State	Maintenance	Improvements	Total
California	12.0	41.0	53.0
Indiana	11.5	10.8	22.3
Michigan	11.09	25.6	37.5
Minnesota	9.4	.2	9.6



Oklahoma	7.7	2.9	10.6
Oregon	14.7	13.3	28.0
South Dakota	36.0	101.0	137.0
Washington	10.5	29.0	39.5
Wisconsin	6.5	5.0	11.5

The legislature of 1937 provided for a State Park Commission, to be composed of members of the Board of Land Commissioners, and a small appropriation was granted therefor. A survey was started. However, eleven years later, no state park system exists. What would happen in Colorado, if through curtailment of national expenditures, funds were no longer provided to maintain the excellent recreational grounds in the National Forests? What assurance do Coloradoans have that the recreational opportunities afforded in conjunction with some of the huge reclamation projects planned or under way will be developed? What hopes have the people of East-

ern Colorado for some state-provided recreation grounds closer to them than non-state recreational areas in the mountains? Would it not seem logical that the State Legislature consider seriously, ways by which such conditions might be overcome? This could be accomplished by initiating a long-range plan for developing a system of state parks in Colorado. By appropriating not less than 10c per capita per year for the next decade, some of the outstanding areas of scenic or recreational value could be acquired and developed for the people of Colorado.

Colorado has been blessed with an abundance of natural beauty. Thus, it holds a focal position in the mind of the nation's outdoor recreationists. To hold such prominence as a vacation-destination state, it needs an outstanding state park system.

THE WEEK-END GARDENER

MOM, we had just as well give up these Bolleana Poplars. I don't believe that they are worth trying to save any longer. Of course, the garden will grow better without them, but they were so pretty. I wish that that Arboretum and experimental grounds were going on now so that they might find something to take the place of the Poplars. We will have to plant some tall junipers or some shrub like the Nannyberry Viburnum to screen out the alley. Had you noticed that the barberries and some of the roses had almost white leaves? The Oldtimer tells me that that is a deficiency disease called chlorosis, and that it is sometimes cured by applications of Iron sulphate or Aluminum sulphate. Will you stop by the seed store and get me a few pounds when you go to town the next time? All my trees and shrubs seem to have stopped growing. I wonder if I should fertilize them. No, the Oldtimer says that it is natural for things to slow up and ripen their wood in the fall, and that over-fertilization now might induce them to put out a soft growth which might not stand the winter cold.

When did you spray last? Here are aphids on the Goldenglow and the Delphinium. I saw ants running up the Juniper tree. I'll bet the aphids are back on it again. Get out the sprayer and load it up with some good contact spray. We will give them another shot. Next week we will start on our vacation. Let's look everything over carefully and be sure that it is clean of insects and well watered. Some of those shrubs that bloomed in the spring are now lopping all over the walks and perennials. I'll have to give them a good trimming.

THE CULINARY HERBS OF COLORADO

LESLIE PAULL

MRS. Davis' excellent article in the Green Thumb (March-April, 1946) attests to her skill both as a gardener and as a cook. I am growing or have grown most of the herbs she mentions and a lot more that are not listed. I learned much from it about their uses that as a mere man I had overlooked.

It does not in any way detract from the value of her article that she stuck to the time-honored group that has come down to us from our European ancestry. For many years I have, along with these, been much interested in a comparable list of herbs found wild in Colorado. Many are native, but there are also a lot of immigrants that have established themselves permanently. Only two of the latter are included in Mrs. Davis' list, and no natives.

Most of the culinary herbs, no matter what the source of their origin belong to a few natural families. I am using this arrangement from the lower to the higher botanical families in the following list.

I. Arum Family—*Araceae*.

Acorus calamus. FLAGROOT, SWEET FLAG. Introduced and found occasionally in swampy places in the northern part of the state. I have grown it for a long time but obtained it from the East. Use — candied root.

II. Lily Family—*Liliaceae*.

Allium sibiricum. SIBERIAN CHIVES. Widely introduced in several western states. Reported chiefly from wet places along the Colo.-Wyo. border. Has the same bunched habit with no real bulbs, same color of flowers and same flavor as common chives, but grows twice or more as large in every particular.

Allium nuttallii. PRAIRIE ONION. Native. Sandy places. Many found growing close together but not matted like chives. We have quite a number of native onion species, all with the characteristic flavor, but lacking in mass production. Flavor stronger than in chives.

III. Buckwheat Family—*Polygonaceae*.

Rumex acetosella. FIELD SORREL. Introduced. Weedy. I have most often found it about old gardens, and about the foundations of old houses. It is likely that it has been brought in as an adulterant of seeds.

Rumex crispus. CURLED DOCK. Immigrant pot-herb. Widely distributed in waste places. Excellent to modify flavor of strong or bitter "greens."

IV. Goosefoot Family—*Chenopodiaceae*.

Atriplex hortensis. ORACH. Escaped from gardens into streets and alleys. Have found it in several towns, and in both the green and the red varieties.

Chenopodium album. LAMB'S QUARTERS. Introduced and widely distributed over the state in waste places. Weedy. Pot-herb, chiefly valuable for modification of strong or bitter "greens."

V. Mustard Family—*Cruciferae*.

Barbarea americana. WINTER CRESS. May be indigenous. Found in wet places above 8,000 feet. Of value as a salad plant, probably, as its relative is thus used.

Brassica alba, *arvensis*, *juncea* and *nigra*, (MUSTARDS), are weedy European immigrants. Among them they are scattered all over the state.

The seeds of all have been used in the manufacture of commercial mustard. The leaves make "strong" pot-herbs with the flavor of mustard. The young leaves are more delicately flavored and may be used as salad.

Roripa armoracia. **HORSERADISH**. Introduced. Escaped from gardens to ditch laterals and other wet places. Use well known.

Roripa nasturtium. **WATER CRESS**. Introduced and widely naturalized in ponds and streams. Considerable quantities appear on our markets every year, chiefly collected from these sources.

VI. Rose Family—*Rosaceae*.

Agrimonia brittoniana. Native. Is a close relative of the one sometimes advertised in herb lists, *A. eupatoria*. It is of doubtful value as a culinary herb, but seems to have some medicinal qualities.

VII. Pea Family—*Leguminosae*.

Glycyrrhiza lepidota. **LICORICE**. Native. It is widely distributed over the state. It is a most ungainly shrub with large prickly burs too reminiscent of cockleburs to make it attractive. Although the commercial product is obtained from *G. glabra*, there is some evidence that the roots of ours are similar in character and flavor. Needs investigating.

VIII. Wood Sorrel Family—*Oxalidaceae*.

Oxalis stricta, its variety *atropurpurea*, with brown leaves, and *O. violacea* are introduced, widely distributed and somewhat weedy. Have very sour leaves of similar use to *Rumex acetosella*, **SHEEP SORREL**.

IX. Parsnip Family—*Umbelliferae*.

Carum carui. **CARAWAY**. Sparingly escaped from gardens. I have grown it but have not found it wild.

Carum gairdneri. Native. Found in Routt County. The roots are re-

ported to be edible. This would make it a food product.

LIGUSTICUM. Four native species found at altitudes of 8,000 to 12,000 feet. They are *L. affine*, *L. porteri*, *L. tenuifolium* and *L. eastwoodi* (the last sometimes assigned to genus, *Ligusticella*). They are allied to *Levisticum* (Lovage) and like that have aromatic roots. All need investigating.

Washingtonia (*Osmorrhiza*) *longistylis*. **SWEET CICELY**. Native, along with two other species, *W. obtusa* and *W. occidentalis*. The two latter are found on the Western Slope at 6,000 to 12,000 feet. They are closely related to *Myrrhis*, from which even the common name has been borrowed. Their qualities seem to lie, unlike *Myrrhis*, in their aromatic roots.

X. Mint Family—*Labiatae*.

Agastache anethiodora. **ANISE-SCENTED HYSSOP**. Long ago I collected this in the near-by foothills and grew it a long time as a very satisfactory perennial. It is a most excellent substitute for Anise also. It is excellent if you like Anise.

Hedeoma hispida. **ANNUAL PENNYROYAL**. Is a native annual closely allied to *Hedeoma pulegiodes*. It is very common on virgin, sandy soils. There is another, a native perennial, *H. drummondii*, found chiefly on the Western Slope.

Nepeta cataria. **CATNIP**. Widely introduced and decidedly weedy. I have never been able to appreciate the ecstasy it produces in cats, nor its persistence in herb seed-lists.

Mentha. We have two introduced species, widely distributed along streams and irrigation ditches.

Mentha spicata. **SPEARMINT; ENGLISH MINT**. This is more common on the banks of ditches. The best known mint of gardens.

Mentha canadensis. CANADIAN MINT. AMERICAN WILD MINT. More common along streams. Requires a more constant water supply than most *Menthas*.

Monarda. WILD BERGAMOT. Of three native species I am familiar with two. *M. menthaefolia*. Rather widely distributed in the foothills.

M. pectinata. Rather common in sandy soil on the plains. I have grown both of these species, but find them more desirable as ornamentals than as herbs. The true Bergamot (*Mentha citrata*) has an added flavor of lemon, making it much superior to the *Monardas*. The third species *M. ramaleyi* is rather rare in the foothills from Boulder to the Wyoming line.

XI. Composite Family— *Compositae*.

Artemisia. SAGE BRUSH. This very large genus has furnished a number of culinary herbs, some of them listed in Mrs. Davis' article. In Colorado there are probably 25 or more native species. Some of them are so aromatic that the characteristic fragrance fills the air where they are abundant. However, for the most part, any attempt to translate this into a flavorful herb meets with bitter disappointment—and I do mean "bitter."

Artemisia aromatica. This is found in high, mountain valleys, at 8,000 to 9,000 feet. It is said to have much the same properties and flavor as Taragon (*A. dracunculus*) which I have grown for many years.

Tanacetum vulgare. TANSY. I have found this in the alleys of several towns, probably escaped from gardens. In former times it was used in puddings and omelets.

Taraxicum officinale. DANDYLION. State-wide distribution in cultivated areas. Used as a pot-herb, and bleached by growing in the dark

as a salad plant. The fermented heads make excellent wine.

I probably have nowhere covered the possibilities, but now I call on the lady enthusiasts, who seem to appear in ever-increasing numbers in this field, to seek out and try out the culinary values of some of the above suggestions and others with which we may now be entirely unfamiliar. During the War the English tea-drinkers were entirely cut off of tea supplies for many months, until they discovered that its active principle, theine, was strongly concentrated in strawberry hulls. So it still is possible to find something new in something old, or even some new better herbs.

PRAYER

Lord of Life, we praise Thee for the glory of earth's sunshine and for the fair face of another day.

We praise Thee for that in us which responds to the voice of crowded marts and also to the company of quiet places.

We praise Thee for the boundless space of little gardens; the good smell of the soil after rain, and the gay chatter of the birds of dawning.

We praise Thee for the peaceful spirit which haunts certain scenes because hearts once were happy there, and may be again.

We praise Thee for the beauty which is so common that it cannot be bought, or sold or cheapened by extravagant claims.

We praise Thee for the jewels which lie hidden in work done with a cheerful will, and for the magic gold which is discovered in play when it is untouched by greed.

We praise Thee for the dear affinities with persons who make us feel safe, and for the passing of those whose smile brings out the sun in our clouded hearts.

From "THE OPEN DOOR"



*House and sloping lawn, showing good use of native stone in wall.
Naturalistic streamway is to the right.*

A GARDEN THAT FITS

A FEW years ago Mr. and Mrs. L. W. Deffenbaugh built a nice little house on the hill west of Golden, Colorado. The slope was steep and there was a little spring of water seeping out of the hill in the rear of

Looking up the informal streamway lined with rocks from the nearby hills.



the house. These at first looked like difficulties, but the accompanying pictures will show how they turned these conditions to good advantage and have developed a very attractive home grounds. A naturalistic sloping lawn was left in front of the house bordered with a stone wall of the rocks from the adjoining hills. An area in the rear was levelled off and a higher wall built to retain the vegetable garden area at a higher level. A few trees and shrubs were planted in this rear area and a flagstone platform constructed to add to its livability and tie it to the house. The little stream from the spring was piped to the side of the house and gave the idea for developing an artificial naturalistic streamway. The native rock from the adjoining hills was largely used. Suitable groups and ledges were transplanted just as they grew, which gave a natural effect. A streamway was constructed which widened in three places to create pools. Some flat weathered flagstones was brought in to border the pool. This was a little nature-faking, but was so skillfully

Looking down the artificial streamway from the upper to the lower pools. →



Large informal pool at bottom of streamway.

done so that it looked quite proper.

The basic planting of the streamside and slopes adjoining was made of native shrubs and evergreens. Some appropriate rock garden plants were brought in to complete the planting. The pictures were taken about a year after the pools were made. A few more years growth of these plants will give a very good screen, and create an effect of a natural streamway.

The landscape development of this place is a very good example of what can be done when we work with Nature and have a feeling for what is appropriate.



Interesting nook in rear garden.



THE DISTANT VIEW

STANLEY WHITE

I LIVE IN ILLINOIS

WHEN my neighbors see me watering my lawn they laugh because they know I am merely playing with the hose. We don't have to water.

The visitor to Denver is amazed to find so much grass, and so well kept. But perhaps, he thinks in so dry a country part of it should be returned to a self-sustaining cover made of native plants. Such a thought is one of the foundations on which landscape design is based: economy, both in original construction and future upkeep. The other foundation of design, just as important, has to do with the effective planning of land areas for many uses and with the pictorial qualities of both town and mountain scenes. What the landscape designer accomplishes is the very significant work of appraising conditions and solving land problems not as horticulture, traffic management, flood control or any single phase of activity no matter how pressing, but as a complete expression of needs, of beauty and amenity. It is not an easy job; but when well done it pays in economies and satisfaction.

Landscape design engages no new or startling principles of art or mechanics; its procedures only are original. One unique contribution is the grading plan which is architectonic, sculptural, geologic,—not simply an engineering device. The other is the planting plan which is primarily a form study of useful plant arrangements made to be beautiful and consistent with good gardening and ecological demands. Whatever pictorial

effects are envisioned must be set into perspective with moving viewpoints—a challenge requiring most special understanding of maps and projection drawings. Success as a practitioner requires most exacting training and long experience in a very broad field of knowledge.

Denver University is developing such a full course of study to be given under the supervision of Carl Feiss. In the East and on the Coast Landscape Architecture is well-established and growing. Here in the Mountains it needs more public understanding. On the civic side the subject grades naturally through parks and recreation into city planning which is a quite distinct phase of land design with no particular line of separation but more emphasis on public relations, the law, and municipal engineering.

Devotees of the Green Thumb can be most helpful in the support of a rational point of view toward good civic and private design. They go together and they require the best talent the universities can produce. The great natural scenic areas are a sacred heritage. On the plains and mountainsides you will find the inspiration and the ageless solution for the common problems of disposition and treatment of rocks, plants and water.

Do you want a house? There is magnificent native stone and timber for character. Do you yearn for Blue Spruces like so many millions of misguided Easterners? You are the only ones who can grow them superbly with a clear conscience and little effort.

Denver and the towns along the

mountains present the opportunity for wonderful gardens both small and large, theatrically supported by the mountain view. Drastically it sets the scale: nothing small about Colorado. A tree, a bench, a hedge and a square of pavement,—with the glimpse of a mountain,—and lo, a garden! If I were to build one I would start with a load of cracked granite and see what it would produce. It would at least signify Colorado.

Back in the valleys are some amazing huts of old timers built of mine timbers set into rocky faces, Colorado style. Adapted to present uses they would look surprisingly modern.

For the present I must be content to live in Illinois, thinking of mountains. But I visualize for Colorado a future for landscape design such as few places can possibly look forward to. The only requirement is appreciation of the scene, some skill and a sensitive touch.

DO YOU LIKE WILD IRIS?

I noticed them first from the road between Monarch Pass and Gunnison where they formed a sea of lavender and green in the wet swampy ground along the Tomichi.

A few days later I stopped off to see my friend, Bud Wilcox, at his ranch near Rye, Colorado. There I noticed blooming wild iris on the bank of a small ditch. Bud brought the shovel and we dug up several clumps, wrapping the roots in old newspapers. When I got home I planted them along the edge of the rock garden, gave them a good soaking and went to bed. Next morning there were the iris still in bloom and looking as though they didn't know they had been moved. They are still blooming. Of the plants I have brought from the mountains I think the wild iris is probably the most adaptable here on the plains.

J. R. BOTLEMAN

THE WEEK-END GARDENER

AS soon as you get those vacation things put away, Mom, come out here in the garden and look at all the weeds that have grown while we were away. I thought that we had the garden and lawn clean before we left. The dandelions are starting to bloom again, and a few of them forgotten now will provide plenty of new plants next spring.

The lawn now shows up as full of crabgrass. I would swear that it was clean all summer. I have heard that there are actually sprays that will kill the crabgrass and its seed without killing the blue grass. I must try some. I hope that the after-effects of its use are not as bad as 2, 4-D. We got a lot of damage to various plants when we used the sprayer for other sprays after applying 2,4-D to the lawn. It seems that there are few things that do a lot of good without some bad points.

Bring a hoe out and help me clean up all the weeds that came up in the perennials and shrubbery while we were gone. Didn't we have a clump of Oriental poppies here at the end of the border? Oh, here they are—all died down. I remember now that the Oldtimer said that August was the time to transplant Oriental poppies. Bring me my shovel.

Bring the hedge shears too. I don't believe that our hedge will grow much more this season, so I will give it a good haircut to last over winter. There, that's better. Now I'll go in and read the article in the garden magazine that tells all about making pools. We should have a little pool where we can raise a few fish.

SAFETY IN VEGETABLE GARDEN INSECTICIDES

By ARMIN BARTELDES

KILLING destructive insects in vegetable gardens calls for a certain degree of caution. When spraying or dusting flowers or shrubs you need only be careful in not injuring the plant or discoloring it.

It is a different matter in your vegetable garden where the use of caustic poisons can cause serious trouble.

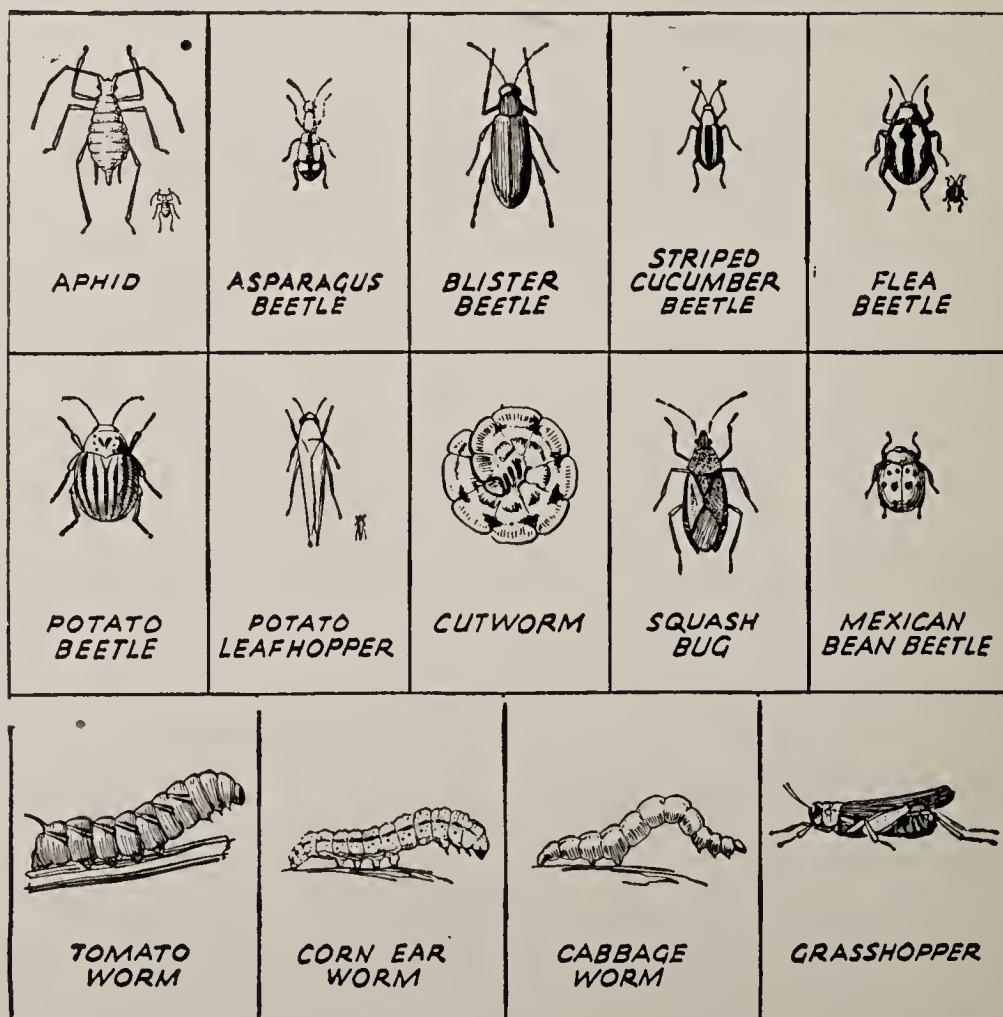
Vegetables most commonly attacked by insects are: cabbage, cauliflower, beans, sweet corn, peas, cucumbers, melons, squash, and tomatoes. These vegetables have certain insects that attack them and nothing else. For instance the bean beetle only works on

beans, the corn ear worm on corn, etc.

The other vegetables, carrots, beets, radishes, lettuce, etc., are usually only bothered by an insect that eats anything that is green like the grasshopper, slugs, etc.

Most caustic poisons have become obsolete as far as their use is concerned in fighting insects in a small family garden plot. These include Paris Green, Arsenate of lead and the arsenites.

Non-poisonous (to humans) killing agents, which have been used for several years, are rotenone, pyrethrum



and sabadilla. DDT and chlordane are recent additions to the insecticide line but both should be used with a little caution. Nicotine should be used with a degree of caution.

Taking the vegetables separately cabbage and cauliflower are destroyed by Aphis and cabbage worms. Rotenone, Pyrethrum, DDT and Chlordane will kill the worms. Pyrethrum or Nicotine will kill the Aphis.

For the bean beetles, Sabadilla and Rotenone are safe and effective.

Peas are only bothered by aphis and Nicotine or Pyrethrum will do the job.

The corn ear worm can be controlled by a drop or two of certain oils, made for this purpose, applied to the end of the ear when the silk is beginning to form or by dusting the end of the ear with DDT. Since the corn ears are protected by the husk DDT is safe to use.

Cucumbers, melons, and squash are best treated with Sabadilla dust which is most effective against squash bugs, cucumber beetles, etc.

Tomatoes are attacked by psyllids and tomato worms. Tomato worms are large and can either be picked off and destroyed or sprayed with most anything. Psyllids are small flat sucking insects that not only injure the plant by sucking the juice from the leaves but also by poisoning it. Sulphur is the best preventative and cure if not used too late.

Chlordane can be used as a liquid or in a dry form in killing grasshoppers. It replaces the old fashioned not effective baits.

If Chlordane or DDT are used on the edible parts of vegetables they should be applied at least a month before the vegetables are eaten.

Reasonable caution will keep you from harm. Whenever in doubt consult your supplier of insecticides.

President Truman on Conservation

Reprinted by permission from Planning and Civic Comment.

At the dedication of the Everglades National Park in Florida on December 7, President Truman made a significant statement of interest to all advocates of conservation. We quote his remarks on the national park system:

OUR national park system is a clear expression of the idealism of the American people. Without regard for sectional rivalries or for party politics, the Nation has advanced constantly in the last seventy-five years in the protection of its natural beauties and wonders.

The success of our efforts to conserve the scenery and wildlife of the country can be measured in popular use. The national park system covers but a fraction of 1 per cent of the area of the United States, but over 25,000,000 of our fellow countrymen have visited our national parks within the last year. Each citizen returned to his home with a refreshed spirit

and a greater appreciation of the majesty and beauty of our country.

These are the people's parks, owned by young and old, by those in the cities and those on the farms. Most of them are ours today because there were Americans many years ago who exercised vision, patience and unselfish devotion in the battle for conservation.

* * *

The battle for conservation cannot be limited to the winning of new conquests. Like liberty itself, conservation must be fought for unceasingly to protect earlier victories. There are always plenty of hogs who are trying to get our natural resources for their own personal benefit.

IS THE LINDEN A NATURAL LIGHTNING-ROD?

LESLIE F. PAULL

Apropos of Miss Johnson's article on Lindens in the April number of the Green Thumb, I am reminded of an almost forgotten piece of research that ought to be of interest.

At or shortly after the turn of the Century it was my good fortune to be associated for a brief time with one of the keenest minds in research that I have ever met. This was Dr. George E. Stone, Botanist at Massachusetts State College. He never confined himself to one line but kept several "irons in the fire" all the time. He was not, however, equally keen about publishing results. For this reason it may be that I am here reporting upon one of his many projects for the first time.

He had an electrical firm especially construct for him the most delicate ammeter within their power. Starting with the known fact that electrical potential for any fixed object, such as a building or pole or tree is zero at ground level, he tabulated readings in mil-amperes of the potential at ten feet above ground on hundreds of individual trees, covering almost 200 species. My recollection is that both native and introduced forms were included. As between individuals of the same species there was but little variation, but enough as between species to make it a definite characteristic. The readings were relatively high among Evergreens, Poplars and Oaks and lowest among Beeches and Lindens.

Doctor Stone had discovered a great variety of casual, botanical data by his extensive reading of local histories, letters etc. concerning Colonial Times in New England. Among the items thus gathered, he discovered

that it was the habit of the native Indians always to seek, if possible, the shelter of Beech or Linden during a severe thunder-shower.

I believe he was not very successful in his endeavor to collect data on what kinds of trees were struck by lightning. The stroke was apt to be an item of news in old papers, but the kind of tree would not be mentioned. Some eye-witness data was available, and all seemed to indicate that the ones most often struck were the "high potential" ones of his list, with no available record against Beech and Linden.

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“WILD FLOWER GARDENING”

By MRS. THERON R. FIELD

Reprinted by permission from “Trail and Timberline”, of October 1927.

NO out-of-door interest brings to old and young richer returns in entertainment and instruction than is found in making the acquaintance of flowers, both in wild and cultivated gardens.

Difference in age even, vanishes before this enthusiasm (although the very young do not, as a rule, fall under the spell). It's a game for the idealistic thirties, the practical forties, the mellow fifties, and the ardent sixties, seventies and eighties! Age is as nothing when good gardeners get together!

Love of things that grow in the earth and people it, is a kindly and enduring interest. It has many followers who are never lonely, who always have something in common to talk about, and something fine and inspiring to think about.

When we speak of Wild Flower Gardening in Colorado, starting a mile high to begin with, including the Alpine plants that grow as high as timberline, and the desert plants of the South; having some 2,000 more or less to choose from and ranking with California and Florida highest in number of wild flowers—becomes a most interesting experience.

This country has had such quantities of wild flowers that in spite of so many people gathering them, it seemed almost impossible that the supply could ever be exhausted; but of recent years, with the means of easy transportation, the overwhelming loss of our choice wild flowers is only too true. It seems strange that the flowers our States have chosen as their emblems have, in most cases, been the ones those States have had to pass

laws to protect! All those who have been fortunate enough to have seen our Blue Columbine carpeting the deep shadows of Spruce and Pine; that glorious Painters' Brush like a flame on the hillside, and fields of Blue Penstemon reflecting the sky above them, should have, in their feeling of joy and pride, a desire to guard and protect them as well!

In the early Spring, starting with Purple Anemonies, in their little fur coats—for snow is often on the ground) all sorts of flowers appear. Mertensia, that graceful, drooping blue-bell, with the tiny tinge of pink in it—growing along brooks and damp places in late April and all of May, is one of the most beautiful of all Spring flowers. Only the female Bumblebee is flying when the Blue Bell blooms, and she is not nearly as gallant as her spouse, for whom she wants the nectar at the bottom of that narrow cup—from laziness or mischief, she goes outside, perforates the cup and drinks—flying away without paying the price! A dash of pollen for a sip of nectar!

Where thousands of our Blue Columbine were to be seen from the roadside ten years ago, hardly one can be found now. Many plants were pulled up by the roots, as a blossom was carelessly torn from them, killing it and future generations as well, for no seed was left. Take a package of seed with you the next time you go to the mountains, plant it with care, and in time, blossoms will again give pleasure to those who pass by. Cut Wild Flowers—never pull them. They fade very quickly, and the majority are thrown away long before home is ever reached.



The Green Thumb

SEPTEMBER, 1948



WHAT? NO VEGETABLES?

We must continually keep in mind the purpose of this organization and magazine. It is, briefly, to promote more and better forestry and horticulture in Colorado and the Rocky Mountain states.

Information on those subjects which can just as well be obtained in other ways we do not try to duplicate. There are too many things which are not found anywhere else to keep us busy. In several good national magazines we find well written and well illustrated articles about house plants, annuals, perennials or vegetables which apply here as well as elsewhere. There are so many things which really need to be said about our peculiarities of climate that we think it unnecessary to duplicate information already available.

It's an Idea

Mrs. Alice Rawson has just loaned Horticulture House a fine collection of kodachromes of the native Colorado wildflowers. It would be nice if others could add to this collection until we would have sufficient material to illustrate lectures or show out-of-state visitors. Kodachromes of cultivated trees and flowers would also be very useful.

A small spot devoted to healing in plants given by friends when space not available for planting is of great value. Often sentimental plants fit into the picture much better at a later date. Call it a "Friendship Nook" or some such name. Properly arranged, it can be beautiful though temporary, and sentiment adds to garden pleasure.

ELSA LAYBOURN.

Cover—Grace Church, Colorado Springs.

Photo by Knutson Bowers

SEPTEMBER SCHEDULE

Fall is here. The children are going back to school and we are again arranging indoor meetings. Will you let us know if you have any preference as to subjects covered, speakers, places of meeting or form of discussion? Would you like to have us arrange a series of talks or classes in your neighborhood?

Sept. 9—Thursday evening, 8 P. M., Horticulture House. Denver Rose Society regular monthly meeting.

Sept. 10—Friday morning, 10 A. M., Horticulture House. Panel on Fall Work in the Garden.

Sept. 11 — Saturday afternoon, 2 P. M. Plant study stroll through Highland Park, 32d and Federal, led by George W. Kelly.

Sept. 15 — Wednesday evening, 8 P. M., Horticulture House. Research Committee, Report of the Shade Tree Conference.

Sept. 16—Thursday evening, 8 P. M., Horticulture House, Colorado Iris Society.

Sept. 18 — Saturday afternoon, 2 P. M. Trip through Washington Park to see and study the flowers, led by Frances White. Meet at Perennial Garden.

Sept. 24—Friday evening, 8 P. M., Horticulture House. The first regular evening meeting of the season. Ed Wallace will show some fine kodachromes taken of trees and shrubs this last summer.

Sept. 25 — Saturday afternoon, 2 P. M., City Nursery at Iliff and S. Logan. Earl Sinnamon, foreman, will show some of the unusual plants growing there.

Sept. 26—Sunday, Meet at Horticulture House, 8 A. M. Trip to mountains to see the Aspen trees. 80-100 miles. Location will be governed by the condition of the Aspen. Private cars if enough available, otherwise bus.

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The Green Thumb

A Bulletin of the
COLORADO FORESTRY AND HORTICULTURE
ASSOCIATION

Organized in 1884

GEORGE W. KELLY, Editor

MISS ALICE WOOD, Assistant Librarian

L. C. SHOEMAKER, Treasurer and Custodian

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Mrs. Leroy McWhinney.....	Home Gardener
Mrs. Churchill Owen.....	Home Gardener
Mrs. Robert M. Perry.....	Home Gardener

Term Expiring in January, 1950

J. Lee Deen.....	Dean of Forestry School, Colorado A & M College
Mrs. John Evans.....	Home Gardener
F. Herbert Gates.....	Colorado State Entomologist
Stanley H. Johnson.....	Lawyer and Home Gardener
Mrs. E. R. Kalmbach.....	Former member of Herbarium staff, Univ. of Colorado
Robert E. More.....	Evergreen Specialist
M. Walter Pesman.....	Landscape Architect
Scott Wilmore.....	W. W. Wilmore Nurseries

Term Expiring in January, 1951

George A. Carlson.....	Park Supt.
S. R. DeBoer.....	Landscape Architect
John H. Gabriel.....	Lawyer
Mrs. George H. Garrey.....	Home Gardener
Fred R. Johnson.....	Assistant Regional Forester, U. S. Forest Service
Allen S. Peck.....	Retired Forester
Earl Phipps.....	Simpson Seed & Floral Co.
L. C. Shoemaker.....	Retired Forester

ORCHIDS TO MRS. KATHLEEN MARRIAGE

Mrs. Marriage's accomplishments in the field of horticulture have been of great value to Colorado. As owner of Upton Gardens in Colorado Springs for many years her experimental work with alpine plants brought under cultivation became internationally known. Since the sale of Upton Gardens she has continued her work of landscape architect.

It was Mrs. Marriage who made the plans for the Opera House Garden at Central City. The story of one of her outstanding achievements—the landscaping of the Grace Church grounds in Colorado Springs—is given in this issue. More recently she made the planting plan for the garden at Horticulture House.

She has written extensively for magazines in this country and abroad. Her delightful sense of humor is evident in all of her writing. The GI's who are studying landscape work under her in Colorado Springs are indeed fortunate.



Bush Morning Glory, Ipomea leptophylla.

Photo by R. J. Niedrach

Nature plays weird jokes, and the weirdest of all is to inflict death for being unfit.

DESERT FIESTA

By D. M. ANDREWS

This is one of several manuscripts given us by Mary Andrews which were written by her famous botanist-nurseryman husband prior to his death in 1938. The story of his life was given in the May 1944 Green Thumb. Here is horticultural wisdom from Colorado's number one plant lover. Ed.

PLAYTIME comes to the desert once in each calendar of months. It is fiesta or festival; also it is flower time and the world is gay with color. Back of it all is a lesson of thrift.

Nowhere does the wearing of holiday apparel become a rite so much as in the desert. Primitive peoples, used to inclemency, observe festal customs ceremonially. But the employment of thrift to provide against sudden need is as ancient as the desert sands.

Coming into the desert at blossom

time one is struck with a sort of incongruity between superb flowering and wizen vegetation. There is a prevalence of contracted foliage or no foliage; of thorns, often with hooks or barbs; of stature shortened or grotesquely misshapen. One cannot escape the conclusion that such features are the record of deprivation long continued and relentless. Nature plays weird jokes and the weirdest of all is to inflict death for being unfit. Survival, even though marked with the scourge, brings the inspiring picture of courage and carrying on.

Flowers such as these and prolific fruition are the culmination of a definite course of events. The Indian, true to his race-old traditions, ends the tribal ceremonial which marks the initiation of their young braves and immediately novitiates enter training for the event a year hence. But the annual cycle of desert plants is a far more ancient heritage.

Thrift implies a conservation of resources, and the most precious substance of the desert is water. Food there is in abundance, but the roots of the plants require it in solution. The cactus supplies the classic example connecting the past with the present under the most difficult of living conditions. And what have we? A green body laced with a beautiful pattern of protective spines, effective against assault except by heavy hoofs. Foliage is usually wanting—the green stem structure serving in its stead. A compact reservoir of food and moisture is conserved by a



Darwin M. Andrews

firm skin against evaporation. It receives and never gives out the materials of its substance except for the process of growth, flowering and maturing of fruit. It exhausts much of its substance during this period so that it passes into a dry autumn with contracted tissues, able to withstand ordinary winter rigors with immunity. Its first sign of activity of the new year is not growth but a replenishing of its bulk by absorption from melting snow, or rain of early spring. Growth of the cushion types is merely a budding process with the production of new spines and a circle of flower buds.

In the rather small northern species of cactus found in Colorado this is quickly accomplished and the flowers immediately follow. Seeds sometimes ripen quickly or ripening may be deferred till autumn or even until the next year. The growth of the cushion types is probably very slow, for the reason that a permanent shrinkage below, each year offsets part of the terminal growth.

The flowers of many cactus are exceedingly showy but are often lacking in fragrance. The visitation of bees and wasps in search of pollen

trips the sensitive stamen filaments so that they close over the pistil, showering visitor and stigmas alike with pollen.

How the cactus got its form would be worthy of a Kipling to explain. Perhaps no explanation is best, lest we become skeptical of what we see. It is a marvel of adaptation and no innovation, because we are unable to reverse the process any more than to change the butterfly back to a caterpillar. In the tropical jungle a certain relative of the cactus is an extensively climbing vine with broad green leaves. Only a wild flight of imagination can picture the steps required to change one to the other.

Colorado has no true desert. This does not deny a most interesting desert flora, more varied in fact than the desert affords. The high mountains, retaining snow from winter to winter, temper the climate three ways. Excessive heat is subdued; they promote rainfall and radiate streams of water; they increase humidity. Portions sufficiently arid to be quite realistic remain, and these are varied by soil conditions and altitude. Even the mirage with its strange witchery lures and deceives, displaying its shimmering pretense of placid water where the thirsty sands are hottest.

Towering yucca and columns of cactus are entirely absent from the Colorado landscape. So, too, the century plant with its candelabrum of bloom; the ocotillo with its flame-tipped wand; the cresote bush beautiful to look upon but aloof with its acrid odor. These and many others are unable to face subzero winters of Colorado's latitude and altitude. Throughout Colorado, extending to middle elevations, hardy forms of yucca and cactus, denied the longer growing season of the South are content with smaller stature size. In their flowering and neat thriftiness there

Prickly Pear Cactus, Opuntia vulgaris





Large Evening Star, Mentzelia decapetala.

Photo by R. J. Niedrach

is no evidence of present hardship of deprivation. Their adjustment seems perfect. The absence of extreme desert conditions appears a grateful relief to yucca and cactus alike. The cushion types of cactus favor rocky eminences or stony ground where they can root deeply in pockets of good soil. The opuntias are not so selective and thrive about equally on slopes or level stretches of sand or adobe. Only the tree cactus (op. arboreous) attains the dimensions of a large shrub.

Little if any true acclimatization is possible among desert plants. For this reason their preference in respect to habitat must be considered carefully. The first and most constant precaution must be to avoid too much moisture. This not a platitude nor is it entirely relative. It is based upon a possible rainfall of 8 to 12 inches per year, or in drier sections up to 18 or 20 inches, and much of that

Pineapple Cactus, Sclerocactus Whipplei
(Opposite page)



limited to a few months of late winter and spring.

Where rainfall exceeds this amount by three or four times there is perhaps no option but to make use of a steep slope or wall or the edge of a terrace supplying also a soil which will drain quickly. This is not as difficult as might first appear. Even in a level garden a part of the rockery section may be sufficiently elevated to provide just the conditions required if full sun is also available.

The gradual drying off and sun-baking of a cactus in the summertime has been second nature so long that it has usurped first place and has become a habit. Plumpness is attractive and satisfies our sense of well-being. But a cactus too well fed up to the approach of winter will find its sense of well-being badly misused before spring.

Other desert plants become dispeptic if offered too frequent refreshment or too rich a diet. The common symptoms are a flabby or flacid growth with lippy stems and a weak or negative effort at flowering. Flowers if produced are lacking in brilliancy and the plant is condemned both for habit and performance. This laying bare of family secrets is not intended to provoke gossip in garden club circles, but rather to insure for the host of beautiful desert flowers a reception at once sympathetic and cordial.

The charm of desert flowers is so often in generous display with economy of herbage. Two or three of the Evening primroses (*Oenothera*) have a flower diameter of two to four inches and a total height of less than 10 inches. In color they are white turning to pink and yellow aging to scarlet.

The sand lily of the dry foothills has grass-like rosettes mingled with crystal white flowers of amaryllis-form continuing for several weeks. The

mariposa lily of dry slopes of foothills and mountains waves on slender stems a heavy blossom or two of white or pale lilac. The most glowing cactus able to survive sub-zero cold is the Turk's Cap (*superbum*) forming mound-like growths of many heads with a multitude of large trumpets of waxy scarlet. In addition lemon, chrome, orange-yellow, pink, rose, crimson and green completes the color range of Colorado cactus blossoms. White and deep blue delphiniums and a number of delightful pentstemon belong to the semi-arid zone along the foothills. The evening star (*Mentzelia*), bush morning glory (*Ipomoea*), and wild four-o'clock (*Mirabilis multiflora*) are glorious desert plants of rather large growth and impressive when in flower. Five species of yucca are indigneous and hardy and two are small enough to be considered for the rock garden. *Lewisia rediviva*, with its big pink stars, grows at the edge of dry gravelly mesas. It should be stored in an upright position in dry sand until October.

Shrubs of miniature and of larger size can be added to the list. There are cliff ferns and mosses (*selaginella*) and other plants attractive for their foliage, some evergreen, some silvery gray and of varied form. Rock gardens of America need variety of material, relief from the commonplace; just what these plants can give. They are beginning to be listed by progressive dealers though it is doubtful if all of them will be immediately available.

Many reasons are given for the social tensions that afflict our nation. Possibly one of them that is not given enough attention is that many Americans are an uprooted people. They have left their original homes where they had their roots and do not feel



Pincushion Cactus, Mammillaria

Photo by C. J. Ott

that they really belong to the communities where they now live. If they had space for outdoor living, for gardening and recreational areas for their children they could get their roots down in their new homes and become better, happier families and develop a pride in their community. People cannot have real attachment to ugly homes and surroundings.

PRESIDENT TRUMAN.

VERDANT VERSES

By KATHERINE PAULL

GROWTH

Have you ever thought of the wonder
Of the seed's becoming a plant?
Of its ripping the earth asunder,
When 'twas only as big as an ant?

Where did the rose get its sweetness,
And what made the violet blue?
What gave the poppy completeness
And sprinkled the daisies with dew?

Whenever I think of this marvel
Of bloom coming out of a seed,
I think—could I live in a hovel
And still perform a fine deed?

The editor would appreciate suggestions as to subjects that you would like to see in this magazine.



What more logical than to employ the beauties of Nature to enhance man's handiwork, all to the glory of God.

CHURCH GROUNDS

GRACE CHURCH, COLORADO SPRINGS

By MRS. KATHLEEN MARRIAGE, *Landscape Architect*

SINCE the church is no longer surrounded by a graveyard, less mournful and more varied plantings are permissible than in old times. Nowadays ecclesiastical architects recognize the opportunity for good design of the surroundings and often call in a landscape architect just as they would in their designing of a dwelling.

The New England village church so white with its tapering steeple already had its beautiful setting of tall arching elms. Out west and in towns where a new treeless site is obtained it is a different story. Here is a real opportunity to plan for trees, shrubs and vines whose mature shape, size, structure, texture and color will enhance the beauty of the building, accenting good lines, softening awkward ones. What is more logical than to employ the beauties of nature to enhance man's handiwork, all to the glory of God.

The strength, stability, weight and size of Grace Church together with its distinctive lines and the beauty of the Castle Rock limestone all called for heavy massed planting. The first of this was done by Mr. P. B. Stewart, who gave generously from his own interesting collection of plants: Foxtail and Limber Pines, Pekin Lilacs and a decorative hardy crab from 12,000 feet altitude on the Tibetan border, several shrub roses, notably *Rosa ecae*, *hugonis* and Austrian Copper. The latter became known locally as "Episcopal Roses."

Some years later when a nearby

dwelling was removed to give the church sufficient ground for its size, Mr. Thomas H. Powers as Chairman of the Grounds Committee took a lively and continued interest in planting and maintenance. Through his generosity all the mass plantings of evergreens and shrubs along the boundaries, and the lower evergreens close by the north buttresses were carried out. These foundation Junipers (*J. pfisteriana*) require constant vigilance in pruning to maintain a dense fuzziness—instead of long bare-stem-

Heavy massed planting balances the weight and size of the building.

Photo by Mrs. Marriage



Doorway Grace Church, Colorado Springs



Photo by Knutson Bowers



Parthenocissus tricuspidata on its way up the tower. Father Hugo's rose by door way.

Photo by Mrs. Marriage

med feathers—to keep them from damage by snow slides. When such slides make a big noisy whoosh and ker-flop on a Sunday morning I can't

help thinking more of the fate of these Junipers than of my prayers.

Evergreen Wintercreeper (*Euonymus radicans vegetus*) grows lustily on the north walls, it finds good climbing in the angles of buttresses and building. Here, too, on its way up the tower is Boston Ivy (*Parthenocissus tricuspidata*). On south and west walls where winter sun is less kind to green things *Parthenocissus santa paulii* grows with abandon. Among the shrubs and trees that grow here and like it are several *Viburnums*, *Prunus tomentosa*, *Buddleia alternifolia*, *Mahonia aquifolium* and Paul's Scarlet Hawthorn. The wisdom of allowing for spacious lawns around the building cannot be too greatly appreciated. This together with informal boundary plantings forming an enclosure are the basis of the design. White Firs and Spruces placed to accentuate the best points of the building conclude the picture.

Grace Church, Colorado Springs

Photo by Loyde Knutson



To save that green thumb, a thumb and forefinger cut from an old rubber glove keeps these two fingers from getting "green" when pulling small weeds. The rubber fingers allow freedom of the hand yet the fingers have full grip on the weeds, which is impossible in most garden gloves.

The old reliable lemon juice as a hand beauty treatment permits one to pull weeds in the morning and "luncheon" or play bridge in the afternoon.

Where lawn is planted right up to foundation, a row of odorless violets between the foundation and lawn will make a neat show of blossoms in



Well designed plantings can be beautiful even in winter.

spring before lawn cutting time and foliage makes border and lessens lawn clipping later on as grass does not penetrate violet plants. They are extremely hardy.

ELSA LAYBOURN.

THE WEEK-END GARDENER

THE kids started to school this week. The garden work is about done up for this fall. Mom thinks that it would be a good idea if we took some definite time out to learn more about some of the gardening problems that have been bothering us. I would like to know the names and characteristics of more cultivated shrubs and perennials so that I can plan our new home a little better than this one. Mom would like to know more about the wild-flowers, and I guess that both of us would like to know more about landscape design and how plants grow. I'll see if Horticulture House can arrange a class where we can study these things together with other interested gardeners.

It looks as though we had had a little frost last night, so I suppose that I should dig the dahlias and gladiolus. I'll ask the Oldtimer how to take care of the bulbs. He says to dig the glads and leave them in shallow flats for a week or two to dry out, then to clean them up and put them away in a place where they will not get too hot or cold, wet or dry and forget them until next spring. The dahlias, he tells me are more particular as to all the extremes of heat, cold, moisture and dryness; so I'll pack them in peat or shavings and put them in the far corner of the basement.

I noticed as I came home that the seed store had a sign in their window, "Get your tulip bulbs now." I'll get the place ready for them and decide what varieties and amounts I want, then I can stop and get them Monday. I'm going to plant more narcissus and crocus, too. They are so cheerful in the early spring.

I wonder if I should be watering things now. I'll ask the Oldtimer. He says that I should be careful about watering for a month or so before the anticipated time for frost, so that plants can ripen up, but that after they have shed their leaves and are not likely to grow any more they should be thoroughly watered. This is so that there will be moisture in the soil to replace that sucked out by the hot dry air of winter.

The time is past when we can ignore the value of our Colorado trees either in the original forest or in our cities.

IT CAN HAPPEN HERE

GEORGE W. KELLY

IN THE January, 1945, "Green Thumb," John W. Spencer told us of the damage to Engelmann spruce by the *Dendroctonus* beetle in the Flattop country. At that time about 17% of the spruce were dead.

I spent a week in that country recently and observed the further damage which has been done. From the tops of the mountains one can look as far as the eye can see in every direction and see nothing but dead spruce. It is a saddening experience. Much of this damaged country is in the Flattops Wilderness area, a place of wild beauty when the trees are green. Experts estimate that over four billion board feet of timber have been destroyed which is approximately ten percent of the timber resources of the state.

This epidemic started following the big blowdown of June 15, 1939. These fallen trees provided such ideal breeding places for the beetles that

they were produced faster than the natural controls could handle them. Three years later the danger was discovered, but by that time it had reached such proportions it was like a forest fire out of control. Two years ago the spruce around Island Lakes, where I recently camped with the Trail Riders of the Wilderness, were all green. Now they are all dead.

The general public has been trained to spot forest fires when they are small and take measures to stop them but only a few people are trained to spot such epidemics as this and warn us of the danger. The time is past when we can ignore the value of our Colorado trees either in the original forest or in our cities. One of our greatest needs right now is more trained men on the job to spot these difficulties before they get out of bounds. The Forest Service and the city officials will provide for these experts when the public demands it. Experience has proven that an ounce

Lower island lake, White River National Forest.





Looking down to Trappers Lake, all Engelman Spruce in sight are dead.

of prevention is still worth many pounds of cure.

It will take hundreds of years to bring this particular area back to its original balance of plants. The encouraging feature of this situation is that there was a good seed crop a few years ago and many small trees are coming, which are not affected by the beetles. Low undergrowth, grasses and flowers are, of course, coming strongly where they are getting more sun through the dead trees. There is no great threat of erosion at the present time but many other things are out of balance. For instance, the trout are so full of beetles which are floating on the lakes that they are not interested in flies. The woodpeckers are working overtime and raising large families. When the spruce have all been killed the beetles will have ruined their food supply and they will starve. Then will begin the long slow comeback. The great danger right now is the threat that the beetles will be spread by wind to adjoining forests. There will also be a serious danger of fire in a few years when these dead trees have

fallen over in a tangled mass obstructing trails. With all forest officials alerted these things may be controlled.

Denver is now in a similar position in regard to its elm trees. It is fortunate that the threat of Dutch Elm disease was discovered in time. Now it remains to be seen if the warnings will be heeded and all possible preventative measures taken at once.

Keep a small jar of potassium permanganate solution in garden tool box and dip trimmers or shears into it after cutting twigs. This disinfects and prevents spreading possible disease from one plant to another.

QUIZ FOR GARDENERS

Unscramble the following, and you will find some of your favorite plants and flowers.

- | | |
|-----------------|------------------|
| 1. SOSILICAP | 8. ALUCELAND |
| 2. GINRAYS | 9. MULCHICCO |
| 3. BURIAHOPE | 10. AGONIBE |
| 4. IMEANRUG | 11. YADILLY |
| 5. RISECALLHOME | 12. Fluer-de-lis |
| 6. LACISTEM | 13. PIEDHUMLIN |
| 7. INCUMBLO | 14. LUCOSE |

See page 31 for answers.



Back Row, against the wall and in doorways, Left to Right: Y.M.C.A. official; Y.M.C.A. official; M. Walter Pesman, Landscape Architect; Little boy; George Braun, Nurseryman; Sam Waldron, Treeman; Ira Lute; Mr. Corfman, Nurseryman; Mr. Ziegler, City parks; Joe Herter, City parks; Carl Aude, Montclair parkways; Alec Graham, Sunken Gardens; Emil Fuerter, Gardener; Dr. C. P. Gillette, Colo. Agri. College; G. A. Klaiber, City forester; Russell J. Ellenbass, Parks foreman.

Middle Row, on steps: Geert Krijthe, Gardener; W. J. Morrill, Colo. Agri. College; Unknown; Unknown; Winfield Prouty, Engineer; George List, Colo. Agri. College;

COLORADO HORTI

GEORGE CARLSON, Superintendent of Denver Parks, has loaned us the original of the above picture. It was taken in the winter of 1912-1913, and shows the attendance at the first meeting of the Denver Society of Ornamental Horticulture. This was in front of the Y.M.C.A. Building.



Wm. Zellers, Gardener; George A. Carlson, City parks; Mr. Patrick, Park Floral Co.; Unknown.

Front Rows, on sidewalk: Unknown nurseryman; Chas. A. Lory, Pres. Colo. Agri. College; Dr. E. P. Sandsten, Colo. Agri. College; Fred C. Steinhauer, Supt. Mtn. Parks; Mr. Hill, Florist; Unknown; Louis Greenlee, City parks; John ??, Washington Park; Thos. Levy, Platte Park; Adam Kohankie, Supt. Washington Park; Robert R. Forest, City nursery; Paul Oske, Nurseryman; Unknown park man; "Smittie" or "Deafie," Highland Park; John Berry, Supt. Parks; Mr. McIntyre, Berkeley Park; S. R. DeBoer, Landscape Architect.

CULTURAL PIONEERS

It is of interest to all present-day horticulturists because it shows so many of the men who have been responsible for the development of horticulture in Colorado during the last forty years. Any corrections or additions to this list will be appreciated.

A landscape architect employs rocks, vistas, plants, trees, flowers, just as a painter uses pigments.

LANDSCAPE THAT MOUNTAIN HOME!

M. WALTER PESMAN, *Landscape Architect*

“NOTHING elaborate now — just a few aspens, columbines and cactus, kinnikinnick and native iris, with perhaps a lilac or two.”

Doesn't that sound like a simple assignment? It's the sort of thing many well-meaning owners of a mountain cottage might say; that is, until they have tried to carry it out in practice. Then it becomes clear to them that iris needs wet ground, cactus desert conditions, columbines shade, and kinnikinnick sun. And then it may occur to them that lilacs are typically cultivated plants and native iris just as typically wildlife representatives.

All this does not mean that landscaping a mountain home is of necessity a difficult thing to do. It does mean that it requires good common sense and a knowledge of plant requirements.

There is a much-spread fear about the higher altitude preventing the

growth of many garden flowers—just as if an added thousand feet of altitude and more winter snow would mean an approach to arctic conditions. Sometimes the very opposite is true and a home in the foothills may have an opportunity to grow certain plants that might find it too uncomfortably hot in the plains region. And certainly it is true that many poppies, for instance, will show a depth of color in the higher altitude that will put lower grown plants to shame.

First of all — what trees, shrubs, and perennials are dependables at, say, seven to nine thousand feet elevation? The Green Thumb of February 1948 shows a long list of both native and introduced plants on page 27. It can be used as a guide from which to choose. Not any spot, of course, will accommodate the whole list.

In the San Luis Valley, for in-

Mountain cabins need not be bare and ugly.





Landscaping of mountain cabin should be simple and appropriate.

stance, *Pachistima*, the beautiful ever-green groundcover common in Ouray, would be quite impossible, Scrub Oak doubtful.* But then, the San Luis Valley is "difficult," to say the least: it is a tough combination, this extreme hot and cold, with alkalinity and ground water within a few feet. Most high altitude regions present much less trouble.

To choose most effectively, watch the immediate surroundings of your home. In doing so you'll find a great difference between north and south slopes; east slopes are apt to be easiest of all, west slopes will resemble the hot south slopes. (By south slopes we mean grounds tipped in such a way as to receive the sun's rays at almost right angles; for that reason they are apt to be hot and dry during most of the year.) Following nature's cure then, you will plant

Colorado "Cedar" or *Juniper* on south slopes, together with *Ponderosa Pine*, and *Pinyon Pine*. Such shrubs as *Skunkbush Sumac* (*Rhus trilobata*) and *Bush Rockspirea* (*Holodiscus dumosus*), *Mountainmahogany* (*Cercocarpus montanus*), and *Wax Currant* (*Ribes cereum*), will survive on these south slopes, once established. *Rocky Mountain Sumac* is good.

On north slopes, however, *Douglas Fir* is at home; *Mountain Ninebark* (*Physocarpus Monogynus*) and *Rocky Mountain Maple* (*Acer glabrum*) will thrive together with the beautiful *Jamesia* in rocky places.

So much for extremes. But there are a number of plants that will grow in various locations. Such are the different kinds of *Snowberry* and *Coralberry* (*Symphoricarpos*), which thrive most anywhere, including shady places; such are *Bush Cinquefoil* (*Potentilla fruticosa*), and *Golden Currant* (*Ribes areum*). Wild roses and

*Until you have developed an intensely green thumb, do not try to transplant scrub oak.

Sandcherry (*Prunus bessyi*) will often fill odd places. And for a good show, why not try *Western Thimbleberry* (*Rubus deliciosus*)?

Again, the greatest success comes from watching the plants in the neighborhood. Perhaps a kind of *Serviceberry* (*Amelanchier*) grows profusely nearby (also called *Juneberry*); or *Pin Cherry* (*Prunus pennsylvanica*), or, in humid places, *Bearberry Honey-suckle* (*Lonicera involucrata*), *Bunchberry Elder* (*Sambucus Microbotrys*) with its striking red berries, or even the native *Mountain Ash* (*Sorbus scopulina*). All right, give them a trial. You may be well rewarded.

Along creekbeds *alders*, *dogwoods*, *native birches*, *hazelnuts* (beaked filberts), and many kinds of *willow* will thrive. A little farther back *hawthorns*, *plums* and *chokecherries* are almost sure to grow. The more nearly you can imitate natural conditions for all these shrubs, the greater your chances of success.

Landscape Design

The same simple "imitation" rule holds for the general layout. Even in the city it is impossible to ignore the immediate surroundings in solving a landscape problem. All the more so in the mountains.

Beautiful little garden nook in rear of Mrs. Henry P. Lowe's home at Central City.



Have you a natural gully running through your place? Make the best of it; rather than flattening it out, emphasize its sides. A picturesque stone or two may help to hold the earth in place, and they will themselves give a choice location for *Jamesia*, fern, or *Alumroot*.

Running water is a godsend on any mountain property; it immediately suggests woodsy areas, patches of meadow, wildflowers hanging over the edge. Even monkeyflowers, chimingbells, and Parry Primrose may be tried in such a location. With a clever disposition of waterworn rocks it is possible to create little cascades, quiet pools, the sound of rushing water. There are enough possibilities to keep the owner busy for many a year.

A rocky cliff suggests little shelves of rock plants, ferns, vines, and possibilities of light and shade changing during the day.

An aspen grove gives an opportunity for quiet seclusion, for columbine nook or orchid dell, for intimate vistas, and grassy meadows. Fashion special types of openings, for both convenience and beauty.

To sum up all this landscape advice: use nature as a guide, profit by its opportunities, but do not slavishly follow its accidental formations. If a tree interferes with a beautiful vista, down she comes; if wild gooseberries usurp a place fit for native calypsos, out with them. Anything in the garden that interferes with the best design of it, must be carefully scrutinized as to its reason for existence. If a landscape architect, either professional or amateur, cannot improve on accidental nature, he cannot properly be called a creative artist. He employs rocks, vistas, plants, trees, flowers, just as a painter uses pigments; the end result in both cases should be a soul-stirring picture, nothing less.

What? No Exotics?

"Introduced from a foreign country"—that's all the word exotic means. This, then, makes both dandelions and butter-and-eggs exotics, as well as tulips, orchids and bridal wreath. I for one cannot get too highly excited about the idea of having a mountain property strictly planted to native plants.

And that holds for design as well. If a nice, well-kept lawn, bordered by lilac or spireas, furnishes a comfortable place to loiter close to a mountain home—what is wrong with it? (Except that it may bring about added work of maintenance.)

Probably the logic of it would run something like this: in the immediate neighborhood of a home one may expect an extension of the living quarters of that home: a place to sit, to play croquet or badminton, a swimming pool, cutflower garden, perhaps a vegetable garden, even a trimmed juniper or two. Again, why not?

Then, as you get farther away from the artificiality of the house, it seems logical to have the landscaping partake more of the surrounding scene—a grove, a rocky wall, a shady pool. Let the change be so gradual you are not conscious of what has happened, as you walk along.

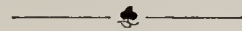
Above all, make the best of good views; even a less interesting mountain top becomes beautiful when framed by a couple of ponderosa pines, a distant range has charm when seen near a closeup aspen grove. (Yes, I know the word is juxtaposition but who wants to juxtapose when on vacation?)

Altitude Opportunities

Recently, in Ouray, I saw the following plants in a grand splurge; they can be used in many a high altitude garden: groups of Oriental pop-

pies, and Iceland poppies; masses of Austrian Copper rose, and Harrison's yellow rose; many kinds of tulips on display; lilacs, snowball, and even a gorgeous Beauty Bush; Spirea vanhouttei covered with bloom; apple trees as fine as anywhere. Outstanding in any mountain region of Colorado are Bleeding Heart, Sweet Peas, Larkspurs (Delphinium), Sweet rocket, daylilies, Shasta daisies and coral lilies.

Some of these are so outstanding in mountain towns, I am just waiting for some civic-minded group to "cash in" on them. Glenwood Springs is already famed for its Paul's Scarlet roses, why not Idaho Springs for Oriental poppies, Central City for Yellow roses, Georgetown for Delphinium, Leadville for Iceland poppies? Just as an illustration.

**DON'T BURN LEAVES
UNDER YOUR TREES**

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Incorporated

The Davey Research Department, Kent, Ohio, says the burning of leaves under trees is apt to kill the bark on overhanging branches and thus permit the entry of boring insects and the decay of the branches. And if the tree happens to have shallow roots, these are in danger of being killed or seriously damaged. Roots are supersensitive to heat and have little natural protection.

There may be no apparent damage to the tree from burning leaves. Yet growth and beauty may be affected the following Spring.

Leaves are an important part of the compost heap, that pile of wetted matter which deteriorates and enriches the soil, and thus should be returned to the soil.



A BAKER'S DOZEN OF GOOD LILIES

What You Want to Know About Them

By CLAIRE NORTON, Laporte, Colorado

Name	Height	Description, Etc.	Blooms	Cultural Notes
Candidum MADONNA LILY	3'-4'	S. Europe and S.W. Asia. The most popular species and one of the loveliest; pure white; widely flaring bell-form; delicious fragrance; base roots.	June- July	August or early Sept. planting; 1-3". Sends up tuft of foliage in early fall which remains green all winter; best in full sun or partial shade in light garden loam. Good bulbs are grown in America.
Longiflorum EASTER LILY	1'-4'	Japan, China, Formosa. Long white tubular flowers familiar to all, as this is the lily commonly sold by florists as the Easter Lily; stem roots. Several varieties appear in the trade; Eximium, or Harisi, the Bermuda Lily, and Giganteum being the most popular.	July, early Aug. Win- ter	Plant 6-8" deep. Not reliably hardy in gardens north of Washington, but much used for winter forcing, and a good outdoor lily in the South. Comes readily from seed, blooming a few months after sowing.

Name	Height	Description, Etc.	Blooms	Cultural Notes
Tenuifolium CORAL LILY	18"-24"	Siberia and North China. A gem with dainty, nodding, waxy blossoms of coral. Stem rooting. Var. Golden Gleam is apricot yellow.	June- early July	Fall planting; 7" deep. Border or rock garden in cool, loamy soil and partial shade. Easy to grow, but short-lived in the garden; readily propagated from seed.
Pardalimum LEOPARD LILY	5'-7'	Western America. A vivid flower reminding one of the skin of the animal for which it is named, shading from deep orange-scarlet at the petal tips to bright orange in the heart of the turk's cap flower; marked with purplish brown spots; bulb roots. Several varieties; Californicum having larger flower and Giganteum growing taller, 6'-8'.	Late June to early Aug.	Plant 3-4". The easiest grown of the Western natives, succeeding in almost any soil and position.
Regale REGAL LILY	4'-6'	Truly a royal lily, with long, flaring trumpet blooms, freely produced, the interior white, golden throated; the exterior flushed with rose and streaked with reddish-chocolate pencilings; heady, sweet fragrance; stems leafy, slender but strong.	July, early Aug.	Fall or spring planting, 9-12". This may well be called "everybody's lily" for it is easy to grow, is a lover of loam and sun, and easily raised from seed. Requires a mulch to protect it from late spring frosts.
Speciosum SHOWY LILY	3'-4'	Japan, Korea, China. Satisfactory and a great favorite, valuable for its late season. Graceful, with segments rolled back, twisted, ruffled and fluted, varying in color from white to deep carmine-crimson, spotted with red and sometimes showing a band of color; delicately fragrant; stem roots. Many named varieties: Album Kraetzeri, snow white, green band; Album Novum, pure white; Magnificum, rosy-carmine, margined white; Melpomene, delicate carmine-crimson with narrow white margin.	Late Aug.- Sept.	Plant 8-12" deep. In Northern gardens requires planting in full sun; likes spring protection and a summer mulch or ground cover; much forced through the winter.

Name	Height	Description, Etc.	Blooms	Cultural Notes
Auratum GOLDEN BANDED LILY	3½'-6'	Tall, stately, with huge but artistic saucer-shaped flowers, white, crimson-spotted and gold banded; heavy scent; stem rooting. Var. platphyllum (syn. macranthum) is considered better than the type, taller and more vigorous, with yellow spotted, white blooms. Var. pictum, stronger than the type, is marked with red spots.	Late July to Sept.	Plant deep, 12" for large bulbs. Unfortunately not always easy to grow. Some shade, protection from cold winds and a cool, peaty soil necessary; heavy mulch required; subject to mosaic disease. Excellent bulbs are now American-grown.
Philippinense PHILIP- PINE LILY	2'-4'	Lovely fragrant trumpets, 6" to 9" in length, of substantial texture, pure waxy white, green throat-ed, on leafy stems. Var. formosanum is most commonly offered.	Aug. Nov.	Plant bulbs 4" deep. A lily that is becoming increasingly popular for garden use, quickly grown from seed, and hardy with ample winter protection; a good pot plant as well.
Tigrinum TIGER LILY	3'-4'	Japan, China, Korea. This is the lily everyone instantly recognizes, for its salmon-orange, turk's cap blooms, spotted with purplish-black, its robust and hardy habit, and its tall leafy stems; many stem roots. Var. splendens is stronger growing with richer color; var. florepleno is double, of a more pleasing hue.	July, Aug., Sept.	Fall or early spring planting. 8-12". Thrives anywhere, in sun or shade, in almost any soil, escaping from old gardens to grow wild along roadsides in certain sections.
Hansonii GOLDEN TURK'S CAP LILY	4'-5'	Japan, Korea. A good lily for the garden, and a handsome tall creature with golden yellow, waxy blooms; petals recurved and spotted with brown; one of the parents of the famous Backhouse Hybrids; stem roots.	June- July	Fall planting, 6-10". Requires planting in partial shade to prevent bleaching of its color. A ground cover is advised as this is one of the earliest to come up in spring.
Superbum AMERICAN TURK'S CAP LILY	3'-10'	Eastern America. A superb native lily, with numerous orange-red, shading to orange, heavily spotted brown, turk's cap flowers, borne in a pyramidal raceme.	Late July to early Aug.	Fall planting: 8-12". Desirable and amenable for garden culture and one of our outstanding natives; best when naturalized among shrubs and not particular about soil, although it likes a damp situation.

Name	Height	Description, Etc.	Blooms	Cultural Notes
Testaceum (syn. Excelsum) NANKEEN LILY	3'-7'	Supposedly a hybrid between Candidum and Chalcedonicum. One of the most beautiful, with texture of the Madonna, but with reflexed perianth segments; color nankeen yellow, rare in flowers; base roots.	Late June- July	Fall planting; 2-4". A satisfactory lily for the beginner, requiring the same general treatment as Candidum.
Elegans	6"-3'	An easily grown group of Candlestick lilies, varying in color from yellow to red-orange and soft apricot; stem roots. Good varieties include Orange Queen, Alice Wilson and Prince of Orange.	June- July	Fall or early spring planting; 8-9". Rock garden, border or naturalizing.

Cater to your bind weed for a couple of weeks to get a vigorous growth. Then sneak up on it with a good weed killer. This is much more effective than to harden it by

lack of water and cultivation and then apply weed killer. A medicine dropper or ear syringe is ideal for applying weed-killing solutions to weeds growing in or near valuable plants.

ELSA LAYBOURN.

THE WEEK-END GARDENER

IS THERE any work to do in the garden today Mom, or can we go fishing? Weeds? I thought that we got them all last summer. Sure enough here are a few dandelions and pursley and amaranth hidden around in odd places. I'll bet that a few plants left around that way in the fall is the reason that we can never seem to get ahead of the weeds in the spring. While I'm at it I'll clean up a lot of these old dead vegetable and perennial tops and add to my compost heap. Mom doesn't like to have me burn anything that will make compost. She says that all our Colorado soil needs humus. I noticed my neighbor burning the dead grass along his vacant lot a week ago and today as I came home I saw that the lower leaves on the trees were all dead. Evidently just the heat from a leaf fire can do a lot of damage to living trees.

Now that I am in the notion, I believe that I will go ahead and work over the perennial beds. Almost everything except the fall asters and 'mums are dormant, and I can work around them. Now if I can find those notes that I made last spring I'll start to thin out the weedy things and move the things that seemed out of place. I'm going to make a map of the border this time so I will be able to tell later where things are planted. The Oriental poppies and peonies are dormant enough to dig up and divide, but most of the other things I'll move with a shovel of dirt. As I am working around I'll make a list of the shrubs that need to be moved when they drop their leaves. It seems as though there are always plants getting overgrown or out of scale. A garden just don't stay put.

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ROCK GARDEN PLANTS

LORENE SMITH

FIRST consideration for a well-developed rock garden should be given to location and construction of the garden. Only if this is carefully planned will the selection of plants be rewarding in its effect.

After this planning, the plant material should be chosen just as carefully to insure harmony of color, texture, height, soil preference, and exposure.

The following list includes only a few of the good rock garden plants, with approximate time of bloom:

MAY

- Alyssum saxatile*, Goldentuft, yellow, 8-12", full sun.
- Anemone pulsatilla*, Pasqueflower, Violet, 8-12" sun or light shade.
- Arabis alpina*, Rockcress, white, fragrant, 6-10", sun or light shade.
- Aubrietia hybrida*, False-wallcress, pink and blue, 4-6", sun or light shade.
- Bellis perennis*, English Daisy, various, 3", partial shade.
- Dicentra eximia*, Fringed Bleeding-heart, rosy pink, 9-12", shade.
- Oenothera missouriensis*, Ozark Sundrop, Golden, trailing, sun.
- Primula auricula*, Auricula, various, 6-10", partial shade.
- Primula veris*, Hardy Primrose, various, 8-10", partial shade.
- Saxifrage decipiens*, Mossy Saxifrage, white, pink, red, 6-10", partial shade.
- Sedum*, Stonecrop, many varieties, bloom throughout summer, shade.
- Viola odorata*, Sweet Violet, violet, 6-8", shade.

JUNE

- Aquilegia*, Columbines, Various, light shade.
- Aster alpinus*, Alpine Aster, lavender or blue, 8-12" sun or light shade.
- Campanula rotundifolia*, Mountain Harebell, blue, 9-12", sun.
- Galium boreale*, Bedstraw, white, 6-9", light shade.
- Iberis sempervirens*, Hardy Candytuft, white, lavender, 8-12", sun.
- Phlox divariacata*, Wild Sweet William, lavender, 12", light shade.
- Phlox subulata*, Moss Phlox, Magenta pink, 6", sun.
- Veronica rupestris*, Rock Speedwell, blue, pink, white, 4", sun.
- Viola*, Violet, various, trailing, partial shade or shade.

JULY

- Achillea tomentosa*, Woolly Yarrow, yellow, 12", partial shade.
- Arenaria montana*, Sandwort, white, 4-6", sun or light shade.
- Campanula carpatica*, Carpathian Harebell, blue or white, 6-8", sun or light shade.
- Campanula pusila*, 6-8", light blue, full sun.
- Cerastium tomentosum*, Snow-in-Summer, white, 6", sun.
- Dianthus deltoides*, Maiden Pink, rosy pink, 6", full sun.
- Heuchera sanguinea*, Corabells, coral-crimson, 12-18", sun or light shade.
- Thymus serpyllum*, Mother-of-Thyme, various, 1-2", sun.
- Veronica repens*, Creeping Veronica, whitish lavender, 1", shade.
- Veronica pectinata*, Comb Speedwell, pink, 1", sun.



AUGUST

Aster amellus, Italian Aster, 2', violet,
sun or partial shade.

Sedum spectabilis, Showy Stonecrop,
rose, 8-12", sun.

SEPTEMBER

Aster Mauve Cushion, Mauve, 18",
sun or light shade.

Sedum sieboldi, Siebold Sedum, pink,
9-12", sun.

Use of these plants in the rock garden should provide garden interest during the entire growing season.



For the first time an English publication, "Gardening Illustrated," is advertising in "The Green Thumb." We invite our members to stop by Horticulture House to read "Gardening Illustrated" and the other fine magazines in the library.

The Gardener's Lament!

(After Three Weeks' Vacation)

It cannot be this is the same
Young thing, I left so trim
So dainty with her forming buds—
She looked so fair and slim.

And now just three short weeks away
When I return, I find
Her vines hang like the ladies' skirts—
She billows 'fore and 'hind!

Her dainty buds have burst their
bounds—
Her "full dress" is a sight—
The unraked lawn like uncombed hair
Looks like a misspent night!

She's bursting with all sorts of
sights—
She's out of shape somehow—
It may be just this queer "New Look"
My garden wears—AND HOW!

ORA KEHN.

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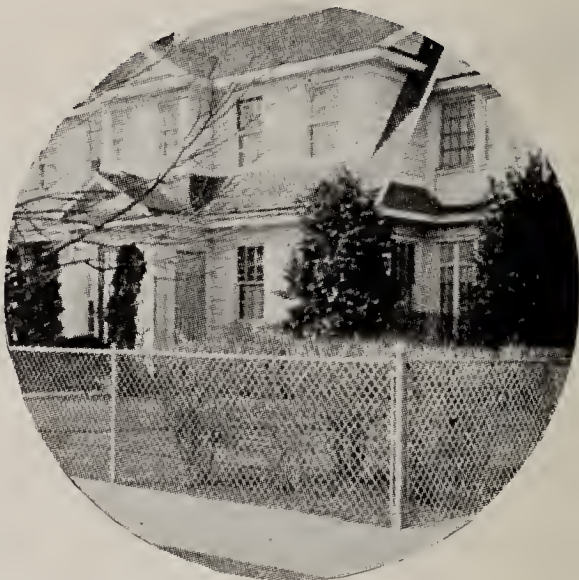
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TABor 4255

To Our Friend JOHN H. GABRIEL August 5, 1948

Some persons never become "has-beens." They are valuable to the very time of their death. Of such was our member John H. Gabriel. He seemed to be an intrinsic part of many organizations.

Is that why it is so difficult to trace the beginning of his influence in the Colorado State Forestry Association?

He was a Life member ever since we can remember. (And a member of the American Forestry Association as well.)

He was an almost perennial Board member. He was Vice President (an active one!) in 1936, and President in much earlier years.

Whenever legal matters were to be decided in the society he was on hand with liberal advice—clearcut, non-evasive, precise—as he was himself.

He was the chief draftsman of our association's various constitutions and by-laws.

When he moved to Denver, in 1889, the Colorado State Forestry Association was three years old; it had just been consolidated into the Colorado State Horticulture and Forestry Association. Forestry and tree conservation was a live issue. Brother Gabriel, or "Uncle John," took an active part in their development.

His interest in various aspects of plant life, conservation, gardening, etc., was as vivid to us plant lovers, as his Masonic leadership was to that fraternity, his Unitarian principles to his church, his political activities to his party and to legislation.

We love and esteem Brother Gabriel for his integrity and independence, for his friendliness and helpfulness, for his never-failing sound advice, and sterling character.

And that is why we want to dedicate these few words to his memory, which is so closely interwoven with the history and the welfare of our Association.

M. WALTER PESMAN.

WHY GROW A GARDEN?

Why grow a garden? some may ask.

I answer: Why breathe the air,
Hear song, watch skylark span the
blue sky of spring?

A garden's not for sport
or merely fruitage when it's done.
What is it, then? What magic, cap-
tivating lure

in seed pushed firm, this tender plant
and blossom, fruit on hand?

I'll tell you this: I think
it's human sharing with the miracle
of growth—

you and I a part of sun and earth
and rain,

the faithful go—between: sower of
of seed, feeding, cultivating,
proud observer to the progress of the
small green sprout

in rhyme with season's ripening:
Patient, full of care, a little boastful.
And oh, the bursting heart at gradua-
tion time—

the flowering: firm, full, good vege-
table
of seed and sun and earth and rain—
and you.

—From Christian Science Monitor,
May 19, 1947, by permission.

ANSWERS

- | | |
|-----------------|------------------|
| 1. Calliopsis | 8. Calendula |
| 2. Syringa | 9. Colchicum |
| 3. Euphorbia | 10. Begonia |
| 4. Geranium | 11. Daylily |
| 5. Hemerocallis | 12. Fleur de lis |
| 6. Clematis | 13. Delphinium |
| 7. Columbine | 14. Coleus |

Contributed by Mrs. Albert Bowen,
556 University Ave., Boulder, Colo



The Green Thumb

OCTOBER, 1948



JOHN Y. BROWN'S MONUMENT

In the May, 1947, issue of the Green Thumb we told of our trip through the Arkansas Valley in September, 1946. In this story we told of some of the things that John Y. Brown had done when he was mayor of Lamar to make that community a better place in which to live. We were recently sent some clippings from the Lamar paper telling of his death on June 23rd.

The development of Willow Creek Park, Fairmont Cemetery, the sand dune plantings, the many fine homes that he helped build and the beautifully landscaped grounds of his own business establishment will all be monuments to the memory of a man who loved his home town. The good influence of John Brown's work will be felt in Lamar for many years to come.

Part of an editorial in this Lamar paper very appropriately says, "This community today mourns the passing of one of its outstanding citizens, a man whom on three occasions was given the office of mayor, but who, in or out of public office, labored to make his community a better place in which to live. Mr. Brown had said that he wished to be buried beneath the pines in Fairmont Cemetery, because he felt he could not rest where there were no trees. John Brown loved growing things, and to him a shrub or tree was something to be cared for and protected from abuse."

John Brown's body lies a moldering, but his spirit goes marching on.

Picture on the cover is at White Rocks, looking down the cliff towards Boulder Creek. Story on page 6.

OCTOBER SCHEDULE

- Oct. 1—Friday, 10 A.M., Horticulture House. "Bringing the Garden Indoors," by Mrs. Kenneth Weeks.
- Oct. 5—Tuesday, 7:45 P.M., Horticulture House. Program by experts for leaders of youth groups and any others interested in teaching nature.
- Oct. 7—Thursday, 8 P.M., Evans School, 11th Ave. and Acoma. Dr. R. C. Allen of the American Rose Society will speak on "Modern Trends in Rose Growing." The Denver Rose Society are very proud to have secured Dr. Allen to talk at this month's meeting. Everyone, even remotely interested in roses is invited.
- Oct. 8—Friday, 7:45 P.M., Horticulture House. This will be the first session of our fall course in Landscaping the new home. Jack Harenberg will talk and illustrate with pictures the proper design of new homes.
- Oct. 9—Saturday Afternoon. Trip to Red Rocks Park to study geology. One of the series for leaders of youth groups. Conducted by Professor Arthur Markman.
- Oct. 15—Friday, 7:45 P.M., Horticulture House. Second session of new home owners' Landscape School course. "Plants for the Home Grounds," conducted by Maurice Marshall, with kodachromes to illustrate.
- Oct. 22—Friday, 7:45 P.M., Horticulture House. The third session of the series, conducted by Gilbert Pike and others from the Alameda Nursery, on "Planting the Home Grounds."
- Oct. 29—Friday evening, 7:45 P.M., Horticulture House. Fourth of the series, on "Home Grounds Maintenance" conducted by Chas. Wilmore of the Green Bowers Nursery.

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Rocky Mountain Horticultural Conference

Reserve February 7 and 8 for the second Rocky Mountain Horticultural Conference to be held those days in the Silver Glade room of the Cosmopolitan Hotel, Denver. Some of the favorites from last year will be back and there will be many new speakers. Watch for further announcements.

ORCHIDS TO MILTON J. KEEGAN

Several years ago Milton J. Keegan prepared for the "Green Thumb" one of its most outstanding numbers, "Lilacs for Colorado" (the Green Thumb, Vol. 1, No. 7, December, 1944). Mr. Keegan is no mere "armchair" expert, as his own lilac collection is the outstanding one of this area.

Recently Mr. Keegan's achievements and standing in the horticultural field were recognized in his being selected by Editor John C. Wister to prepare the Rocky Mountain Section of the Woman's Home Companion Garden Book. This excellent new book was reviewed in the Green Thumb last March, 1948.

With all the encroachments of his hobby, however, Milt has found time to be President of the City Club, the Denver Bar Association and the Colorado Bar Association.

It is hoped that Green Thumb readers may again be favored by one of Mr. Keegan's brilliant articles.

The Green Thumb

A Bulletin of the

COLORADO FORESTRY AND HORTICULTURE ASSOCIATION

Organized in 1884

GEORGE W. KELLY, Editor

MRS. C. A. BARBOUR, Editorial & Adv. Asst.

MISS ALICE WOOD, Assistant Librarian

L. C. SHOEMAKER, Treasurer and Custodian

1355 Bannock St., Denver 4, Colorado

Phone TABor 3410

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Vol. 5	October, 1948	No. 10
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S. R. DeBoer.....	Landscape Architect
Mrs. George H. Garrey.....	Home Gardener
Fred R. Johnson.....	Assistant Regional Forester, U. S. Forest Service
Allen S. Peck.....	Retired Forester
Earl Phipps.....	Simpson Seed & Floral Co.
L. C. Shoemaker.....	Retired Forester

Urban children are avidly hungry for nature lore and out-door experiences first-hand.

OUTDOOR EDUCATION

ROBERTS MANN, *Superintendent of Conservation, Forest Preserve District of Cook County, Illinois.*

Condensed from a Paper Presented Before the NATIONAL SHADE TREE CONFERENCE, August 26, 1948, at Milwaukee, Wisconsin.

YOU folks have two jobs. One is concerned with the propagation, planting and care of woody plants. The other, equally important as I see it, has to do with public relations—including the education of the public.

We, in Cook County, have found that nature appreciation—including appreciation of trees—if engendered by nature lore acquired first-hand, is the key to the door opening upon a concept of the broad field of conservation. That concept is essential to good citizenship, wise use of public property, wise use of all our natural resources. An intangible by-product for the individual will be a fuller, richer life. Conservation must be taught in all the schools, at all levels, as a cultural subject. Biology must and can be taught as a fundamental cultural subject: as a fascinating dramatic story of all life, accompanied by rich emotional experiences out-of-doors to bridge the wide gap between the classroom and things as they exist in nature: not just out of books; not as a terrifying maze of scientific names and anatomical structures.

We've got to teach conservation in terms of the interdependence and interrelationship of all things on earth, including man himself. For too many earnest souls, conservation means no more than absolute protection and optimum habitat for ducks, or deer, or trees, or songbirds or wildflowers. And the long-haired pansies babbling about the little birds and the bees have plastered such a lah-de-dah label on "nature study" and "na-

ture lore" that many of us prefer the term "Outdoor Education for Outdoor Living."

For many years following the White House Conference of Governors, called by Theodore Roosevelt in 1908, the symbol of conservation was "The Tree." Among too many agricultural thinkers it means, now, soil conservation—period. Conservation of the biota, including the soil and of the biota, including the soil and the plant layer that rests upon it, and the insect layer that rests upon that, and so on up to the top of the biotic pyramid where stands the arch predator—man himself—has been something for the theorist and the biota to worry about. But now foresters are planting earthworms as they plant trees, and have gone from the "cabbage brand of silviculture" back to mixed woods of native species, populated with wildlife including predators.

The basic defect in the teaching of conservation—which, after all, is a way of living; a way of living that looks to the future—was best phrased by Aldo Leopold, that great forester, professor of wildlife management, ecologist and conservationist, whose tragic death this spring saddened us all. He said: "We have not asked the citizen to assume any real responsibility. We have told him that if he will vote right, obey the law, join some organizations, and practice what conservation is profitable on his own land, that everything will be lovely; the government will do the rest. This formula is too easy to accomplish anything worthwhile. No

important change in human conduct is ever accomplished without internal change in our intellectual emphases, our loyalties, our affections, and our convictions."

"The practice of conservation must spring from a conviction of what is ethically and esthetically right, as well as what is economically expedient. A thing is right only when it tends to preserve the integrity, stability and beauty of the community, and the community includes the soil, waters, fauna and flora, as well as people."

An effective program should help the child to realize that besides being responsible for his own property he owes a similar responsibility to others; that he is part of a balance which, for his own happiness and that of others of this and future generations, must not be upset. Conservation of our natural resources should be the *personal* concern of *everyone*. There is a personal as well as a social obligation to conserve. No one has the moral right to waste or use unwisely.

There are two bottlenecks; (a) the necessary revision of existing courses and textbooks to include the desired conservation materials; (b) teachers who have a broad conception of the subject and the requisite training to teach it. In the great metropolitan area which includes Chicago, we have found an almost universal hunger for Outdoor Education, on the part of both children and adults. We have made some significant contributions toward supplying that need.

For years we viewed with dismay the unintelligent use, the misuse and the vandalism in our preserves. As the population of Cook County grew and the number of annual visitors in our areas skyrocketed, we found ourselves unable to adequately maintain those areas and their facilities.

We found that about all the man-

agement needed by the flora and fauna of a naturalistic area, even in a county of 4,500,000 people, is rigid protection from fire, from automobiles, and from hunting, trapping and other molestation. Left alone, Mother Nature does the best job of working out her own problems, her own system of checks and balances.

The quantity and condition of the recreational facilities provided are seriously affected by the misuse of those facilities. The same applies to wildlife—the flora and fauna. Unintelligent use and failure to use, on the part of the public, means that the people are not enjoying what they pay for. We began with the conviction that Outdoor Education—nature education—at all age levels, would increase the capacity of the people for intelligent use, appreciation and enjoyment of the forest preserves and accomplish a fuller, richer life for the individual.

For two years, our naturalists conducted experimental field trips for selected groups of children from Chicago and from suburban towns—groups of different ages, nationalities, races, and economic statuses. We also took groups of teachers, and groups of youth leaders, on similar field trips. We confirmed our thesis that urban children are avidly hungry for nature lore and outdoor experiences first-hand; that they are not getting them and that Chicago children, particularly, are utter strangers out-of-doors; that too many teachers and too many youth-group leaders are also strangers out-of-doors and lack either the knowledge, or the training, or the ability—or some combination of the three—to teach the natural sciences and outdoor living; that there is a wide gap between the classroom and things as they exist in nature which should and can be bridged. We set about to bridge it.



*The author examines the bare rock face habitat of *Asplenium Adiantum-nigrum*.
White Rocks.*

*There are many such interesting spots over the state
deserving preservation.*

WHITE ROCKS

By WILLIAM A. WEBER

ONE of the most interesting botanical areas in the state is the outcropping of sandstone cliffs locally known as the White Rocks, situated in the valley of Boulder Creek a few miles northeast of Boulder. Because of the peculiarities of soil condition, exposure and various climatic factors, this area is somewhat of an island of native vegetation in a highly agriculturalized area. Some of the

plants to be found at White Rocks are relics of a once more widespread Great Plains grassland; some are plants of eastern North America which have been eradicated from most of Colorado by the severe climatic conditions obtaining in our region. One species, the fern, *Asplenium adiantum-nigrum*, is found only in about two other locations in the western hemisphere.



Close-up view of Asplenium Adiantum-nigrum.

Photos on these pages by author

White Rocks forms the southern edge of Gunbarrel Hill, a gently sloping mesa undercut by Boulder Creek, which flows east through the area. Here, a prominent rock ledge consisting of massive sandstones of Laramie and Fox Hills age is exposed. On the surface the sandstone weathers into peculiar polygonal blocks, commonly described as turtlebacks. Cultivated fields and pastures encroach very closely upon the natural area which is about three miles long and one-fourth mile wide. The outcrop supports a rather luxurious vegetation because of water seepage at the foot of the rocks. This slight amount of moisture, together with the

shade provided by the ledge, provides ideal conditions for the growth of many plants not found for miles around in any direction. Barn Owls, Great Horned Owls, Cliff Swallows and many other birds make this oasis

The turtlebacks.





From the top looking down. Photos on this page by George W. P.

their home. A peculiar form of Horned Lizard has been found here, and the Six-lined Racerunner Lizard is abundant. Recently a ground bean, *Apios americana*, and a grass, *Panicum tennesseense*, were collected here, the second known occurrence of these species in Colorado.

The land is in private ownership

but is of little value for agriculture or grazing. Botanizing parties find it of great interest. There are many such interesting spots over the state deserving preservation for one reason or another, which are not included in the National forests or National parks. Our citizens might well learn more about them.

Along the base of the outcrop showing the typical vegetation and little caves where ferns are found.



DUTCH ELM DISEASE CIRCULAR

The Extension Service of The Colorado A. & M. College at Fort Collins has recently published a bulletin entitled, "The Dutch Elm Disease and Its Carrier, the Smaller European Elm Bark Beetle." This is Circular 155-A and may be obtained from your County Agent or the college. W. J. Henderson, Extension Plant Pathologist, and Gordon Mickle, Extension Entomologist, have together prepared this material from all known information available.

In view of the widespread distribution of this beetle and the finding of

a few cases of the disease in Denver it is very important that every owner of elm trees read this circular and take the preventative measures recommended there. Authorities all agree that the most important action at the present stage of the disease is to destroy or spray EVERY recently dead limb or trunk of elm in the city or surrounding country before the time of emergence of the first brood of beetles in the spring.

We may ignore this serious threat now and pay dearly for it later, or we make the effort to clean up possible breeding wood now and keep this disease in check.

THE WEEK-END GARDENER

I walked around the garden before I went in to lunch today and noticed quite a few trees and shrubs that needed trimming. Some had dead branches and others were lopping down over the walk. It's nice invigorating weather this afternoon, so I guess I'll get my clippers and saw and spend the afternoon cleaning up.

I read that new bulletin about the Dutch Elm Disease last night and it emphasizes the need of EVERYONE removing and burning all the recently dead limbs in their Elm trees. This also would indicate that elm logs or firewood cut last summer might provide ideal breeding places for the beetles which spread the disease. This bulletin indicates that this wood should all be completely barked, burned or sprayed with DDT in fuel oil. It seems that the most serious spread of the disease is liable to happen when these beetles fly soon after the leaves appear on the elm trees next spring.

I stopped in at Horticulture House a few days ago and read some recent bulletins about trimming. According to them it is important to make all my cuts close up to the trunk or larger limb so that the flow of sap next spring can heal these wounds over.

There seems to have been some controversy as to the advisability of painting larger wounds, but I believe that much of this doubt has been because of using unsuitable paint. These articles indicate that a suitable paint should stick tight and remain flexible for many months. In spite of our drier climate, which discourages fungus growth on the surface, these experts recommend that all wounds on trees be treated with a disinfectant to kill spores of fungus growth which might start decay inside the tree where it is continually moist.

When all my trimming is done I am going to fix up that old picket fence in the rear and give it a coat of paint while the vines are not covering it.

Mom wants me to get a load of fertilizer and spade it into the ground where we will plant the garden next spring. That is a good idea but a little hard on my back.

LOW SHRUBS FOR COLORADO LANDSCAPING

GEORGE W. KELLY

ONE of our greatest needs at the present time in landscape material for Colorado is good low shrubs. In the past there have been many shrubs planted which soon grew much too large for their location. This has caused many gardens to look overgrown and ragged, in a very few years.

Not all of those mentioned below are suitable for every situation, but by selecting suitable material from this list the possibilities will be considerably extended.

The first part will include those shrubs which will usually stay under three feet high. This is the size where a greater variety is most badly needed.

Amorpha canescens, LEADPLANT AMORPHA. 1½-2'. Fine gray foliage and small spikes of violet-colored flowers in August. Blooms when little else is showing color. Enjoys sun and dry places. Loose irregular growth which is inconspicuous except when in bloom. Very useful.

Amorpha nana, DWARF INDIGO AMORPHA. 2-2½'. Much like *A. canescens*, but green-leaved and not as showy.

Berberis mentorensis, MENTOR BARBERRY. 2-3'. Leathery, almost evergreen leaves. Stiff, compact habit of growth. Needs some shade, and prefers heavy rich soil.

Berberis thunbergi stropurpurea, REDLEAF JAPANESE BARBERRY. 2-3'. Not as vigorous in growth as the regular green leaf barberry. A little more particular as to soil and protection. Spectacular red-green leaves all summer.

Its thorns make it respected by boys and dogs.

Berberis thunbergi, Cl. BOX BARBERRY. 1-2'. Very slow of growth. More difficult to grow than other barberries. Keeps low.

Berberis thunbergi, Cl. TRUE-HEDGE COLUMNBERRY. 2-4'. A very valuable plant for semi-formal hedges. Its ordinary habit of growth is much higher than broad. Neat, compact growth which needs little trimming to keep in bounds.

Caragana aurantiaca, DWARF PEA-SHRUB. 1½-3'.

Caragana pygmaea, PYGMY PEA-SHRUB. 1½-3'. These dwarf shrubs have neat, small leaves and compact habit of growth. Yellow flowers. Ragged in winter but very neat in spring. May be sheared for hedges.

Ligustrum vulgare, Cl. LODENSE PRIVET. 1-3'. One of our most useful low shrubs. Very slow growth. May be sheared to take the place of boxwood, or can be left informal. Compact growth and dark green leaves which remain on very late in fall.

Lonicera japonica halliana, HALLS JAPANESE HONEYSUCKLE. 6-12". Usually classed as a vine, but useful for covering banks and bare ground. Holds its leaves well into winter. Fragrant, cream-colored bloom.

Lonicera heckrottii, GOLDFLAME EVERBLOOMING HONEYSUCKLE. 6-12". Almost evergreen. Often in bloom and leaf until after Thanksgiving day. Flame colored flowers. May be trained as a ground cover or low shrub.

Lonicera spinosa alberti, ALBERT THORN HONEYSUCKLE. 2-3'.

Of low sprawly growth. Fragrant lilac-colored flowers in May.

Lonicera species, HONEYSUCKLE VINES. 6-12". Several other species may be used as ground covers. *L. periclymenen*, *L. sempervirens*, *L. tellmaniana* and others.

Mahonia aquifolium, OREGON-GRAPE. 1½-3'. Our best broad-leaf evergreen. Usually winter-burns some unless well shaded. May be cut back each year for best effect. Should be used more.

Physocarpus monogynus, MOUNTAIN NINEBARK. 1½-3'. Open spreading shrub for naturalizing in part shade. Spirea-like bloom.

Potentilla fruticosa, BUSH CINQUEFOIL. 1½-2'. Small yellow flowers all summer. Grows in a variety of situations. Subject to attacks of spidermite. There is also a white flowered variety which is neater in shape and less subject to spider damage. A little ragged looking in winter, but beautiful in summer.

Prunus tenella (nana) RUSSIAN ALMOND. 1½-3'. A striking shrub in early spring when the bright, red buds break into pink flower. Very slow growing and a little irregular in habit.

FLORIBUNDA ROSES. 1-2½'. While not strictly classed as shrubs, Floribunda roses are filling a need for neat low plants which will bloom all summer. They come in a great variety which should be used more.

Ribes setosum, REDSHOOT GOOSEBERRY. 1½-2'.

Ribes inerme, WHITE STEM GOOSEBERRY. 1½-2'. Spreading natives, useful for covering banks or bare ground. Need some shade and moist soil. Edible fruit.

Symphoricarpos mollis, SPREADING

SNOWBERRY. 1½-2'. An old favorite. Neat habit, except that it does spread by suckers. White berries in winter. Useful in shade.

Symphoricarpos occidentalis, WESTERN SNOWBERRY. 1½-2'. A common native useful for covering banks and bare ground. Suckers out and forms dense patches.

Symphoricarpos oreophilus, MOUNTAIN SNOWBERRY. 2-3'. Neat native shrub. The type from near Georgetown makes a nice cultivated shrub.

Viburnum opulis nanum, DWARF CRANBERRY BUSH. 1-2'. Very slow growing. May be sheared or left informal. Dense growth. Likes good soil and some shade.

MEDIUM LOW SHRUBS, 3-6 Feet Tall

There are many more good shrubs available in this height class than in the lower size. Many of these should be in more general use to take the place of shrubs which eventually grow too large.

Artemisia abrotanum, OLDMAN WORMWOOD. 2-3'. Tolerates heat, cold and alkaline soil, so is used where nothing else will grow. Gray foliage and rather loose habit.

Berberis koreana, KOREAN BARBERRY. 3-5'. Of rather vertical habit. Good flowers, fruit and fall color. Suckers some but may be kept in bounds. A very useful and attractive shrub.

Berberis thunbergi, JAPANESE BARBERRY. 2-4'. An old standby. Should have rich, heavy soil to do well.

Cotoneaster divaricata, SPREADING COTONEASTER. 2-3'. Sometimes kills back at the tips, but makes an attractive shrub where it has some protection.

Cotoneaster integerrima, EUROPEAN COTONEASTER. 3-5'. Beautiful persistent red berries.

- Very hardy. Nice spreading habit. Should be better known.
- Euonymus alatus*, WINGED EUONYMUS. 3-5'. Neat, compact, slow-growing shrub. May be sheared for formal use. Good fall color, and some pink fruit.
- Forsythia suspensa*, WEEPING FORSYTHIA. 3-4'. Spreading shrub which makes a big showing every few years with its very early yellow flowers.
- Hibiscus palustris*, COMMON ROSEMALLOW. Large hollyhock-like flowers in a variety of colors. Not strictly a shrub, as it kills to the ground each fall, but has the most showy flowers of any similar plant.
- Holodiscus dumosus*, BUSH ROCK SPIREA. 3-5'. An attractive native shrub with plumes of whitish flowers in summer. Likes full sun and good drainage.
- Hydrangea arborescens* and *H. a. grandiflora*. HYDRANGEA. 2-4'. Frequently kill to the ground, but when given a little protection may make strikingly beautiful shrubs.
- Jamesia americana*, CLIFF JAMESIA. 3-6'. A beautiful native of rocky places. May be grown under cultivation if given good drainage.
- Lespedeza bicolor*, SHRUB LESPEDEZA. 4-5'. (Purple Bush Clover.) Kills back much as a perennial, but makes a fine showing in the fall with its arching stems covered with purple flowers.
- Lonicera involucrata*, BEARBERRY HONEYSUCKLE. 2-3'. A native of rather open growth. Prefers rich moist soil. Interesting for its persistent black fruit set in purple involucre.
- Lonicera maximowiczii sachalinensis*, SAKHALIN HONEYSUCKLE. 4-6'. Many small dark red flowers and red fruit. Neat habit of growth. Worthy of greater use.
- Lonicera syringantha*, LILAC HONEYSUCKLE. 4-6'. Spreads to dense rounded shrub of eight feet wide. Masses of fragrant lilac-colored flowers in May and a few all summer. Useful where there is room for it to spread.
- Philadelphus lemoinei*, LEMOINE MOCKORANGE. 3-4'. A neat rather formal little shrub. Flowers small and single, but covering the plant. Perfectly hardy. May be used in place of larger shrubs such as Bridal Wreath Spirea.
- Philadelphus virginialis*, Cl. BOUQUET BLANC MOCKORANGE. 3-4'. Larger flowers than *P. lemoinei*, but not as hardy. There are several other named varieties of mockorange similar to this which are useful.
- Physocarpus opulifolia*, Cl. DWARF COMMON NINEBARK. 4-6'. Has all the good features of the Bridal Wreath Spirea and several more. Good fall color. Usually smaller in scale than the Spirea. An all-purpose plant.
- Prunus japonica*, CHINESE BUSH CHERRY. 3-5'. Similar to flowering almond in leaf and habit of growth. Single white flowers similar to Nanking Cherry. Red cherry-like edible fruit.
- Prunus pumila*, SAND CHERRY. 2-4'. Rather coarse open habit of growth. Very attractive in flower, and produces large quantities of edible fruit.
- Rhodotypos scandens*, BLACK JET-BEAD. 3-4'. Neat habit of growth. White raspberry-like flowers, and jet black berries. Needs a partly shaded spot.
- Rhus glabra cismontana*, ROCKY MOUNTAIN SMOOTH SUMAC. 2-4'. Has the brilliant fall color of the staghorn but in much smaller scale. Good for naturalizing on dry banks.

Rhus glabra laciniata, CUTLEAF SMOOTH SUMAC. 2-3'. Low growing. Beautiful compound leaves with red stems. Brilliant fall color. Loose irregular habit of growth.

Ribes alpinum, ALPINE CURRANT. 2-4'. Very neat, slow growing and compact. May be clipped for a formal hedge or can be left as an informal shrub.

Ribes cereum, WAX CURRANT. 4-6'. A useful native shrub for hot dry places. Has small pink flowers and red fruit.

Shepherdia canadensis, RUSSET BUFFALOBERRY. 2-3'. Interesting leaves, bloom and fruit. Must have well-drained soil and part shade.

Symphoricarpos albus, COMMON SNOWBERRY. The old standby for low foundation planting, especially in the shade. Still useful when it is understood that it suckers out and needs replacing frequently. White fruit persisting all winter.

Symphoricarpos chenaulti, CHENAULT CORALBERRY. Of more spreading habit than the common kinds. Beautiful foliage and fruit. A little tender.

Symphoricarpos orbiculatus, INDIAN CURRANT CORALBERRY. 2-3'. Similar in habit and use to the two above but lower and coarser. Red fruit.

Rosa species, WILD ROSES. 1½-3'. Good for naturalizing on banks or in waste places. Combines well with native snowberry.

Salix purpurea, Cl. DWARF PURPLEOSIER WILLOW. 3-5'. Small delicate leaves and stems. Very neat if left natural shape or may be sheared. Tolerates a great variety of soils, but occasionally blights badly.

Spirea bumalda, Cl. FROBEL SPI-

REA. 1½-3'. Magenta heads of flowers in summer when the violent color clashes with few other flowers. Usually kills back in winter. *Spirea bumalda*, Cl. ANTHONY WATERER SPIREA. 1-2'. Similar to above but lower.



The above picture is of Robert E. Ewalt gloating over his fine crop of Polly peaches on the tree by his back door. Ten to fourteen bushels of fine peaches from your own back yard is something to gloat about. More people might follow his example.





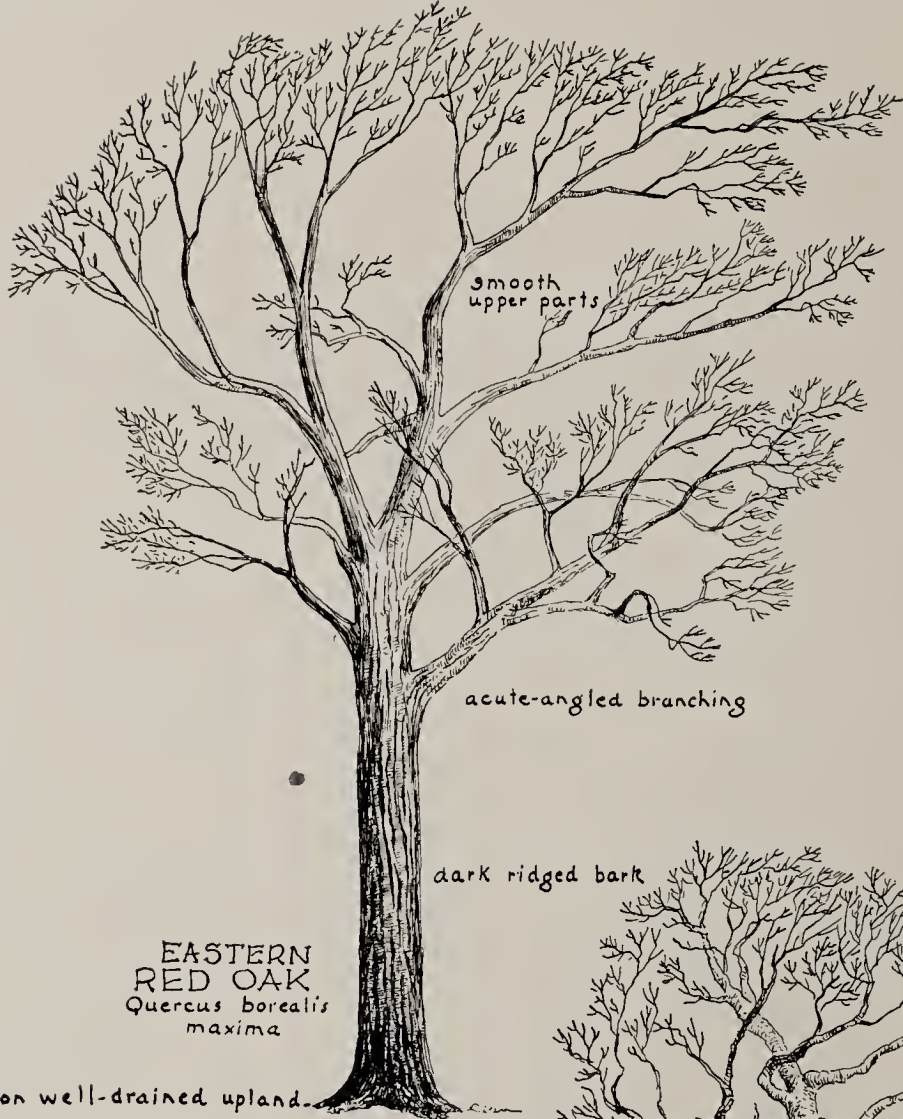
Oak trees in Civic Center, Denver.

Picture on opposite page of Quercus velutina on Mapleton hill in Boulder, Colo.

Other keys include either too much or too little for practical use in Colorado.

OAKS IN COLORADO

I REALIZE that I am sticking my neck away out in attempting to compile a key to the Oaks found in Colorado, but such a key is needed, and wiser men than I hesitate to tackle it, so, here goes, "for better or for worse." If it enables someone to identify the Oaks they come into contact with, the effort will be worthwhile. I would appreciate any corrections or suggestions. Parts of the descriptions used here have been taken from the key prepared by May T. Watts of the Morton Arboretum, some from Rehder's "Manual of Cultivated Trees and Shrubs," the native scrub types from Dr. John B. Hartwell, and some from other sources and personal observation. All known existing keys included either too much or too little for practical use in Colorado.

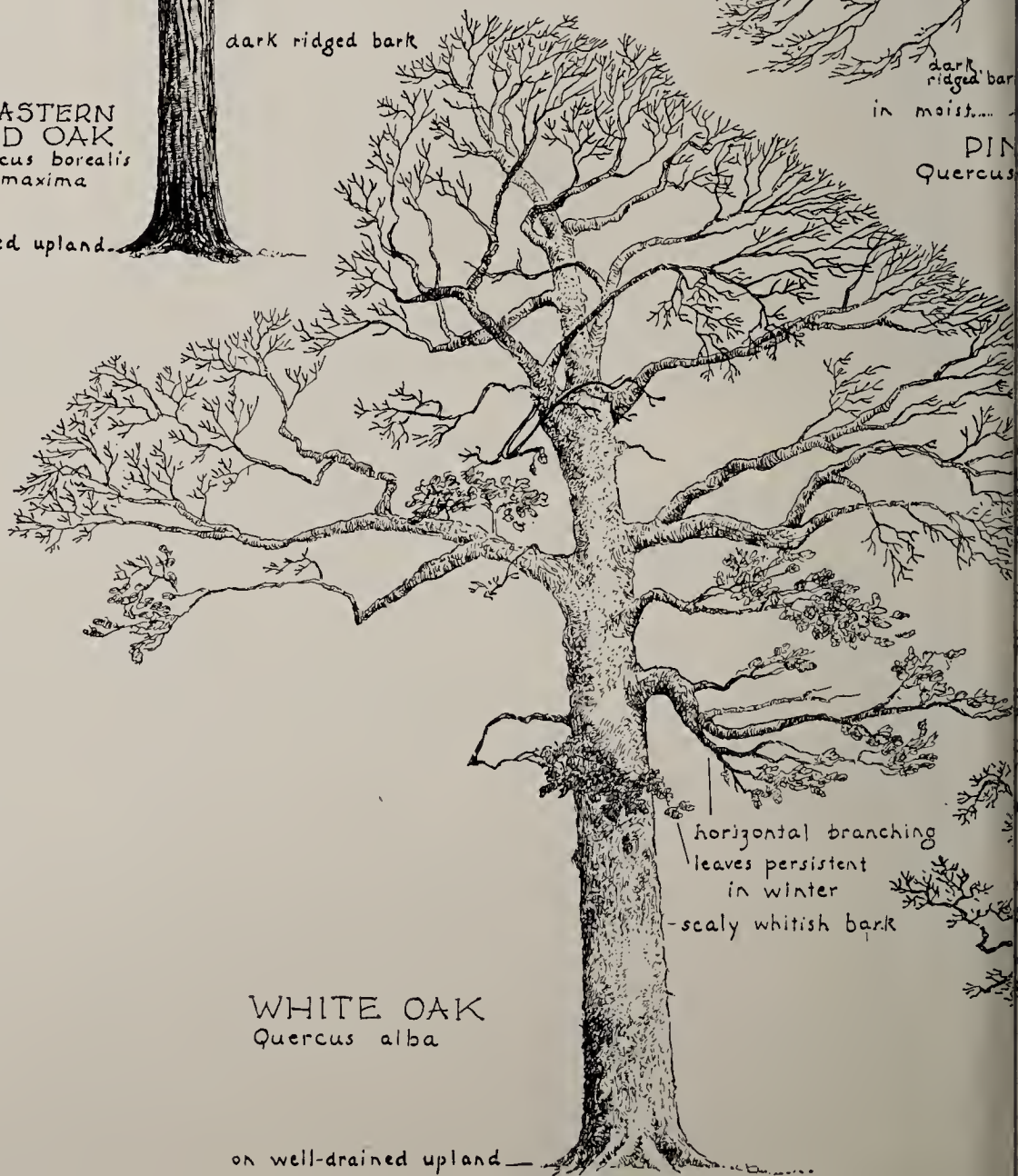


EASTERN
RED OAK
Quercus borealis
maxima

on well-drained upland.

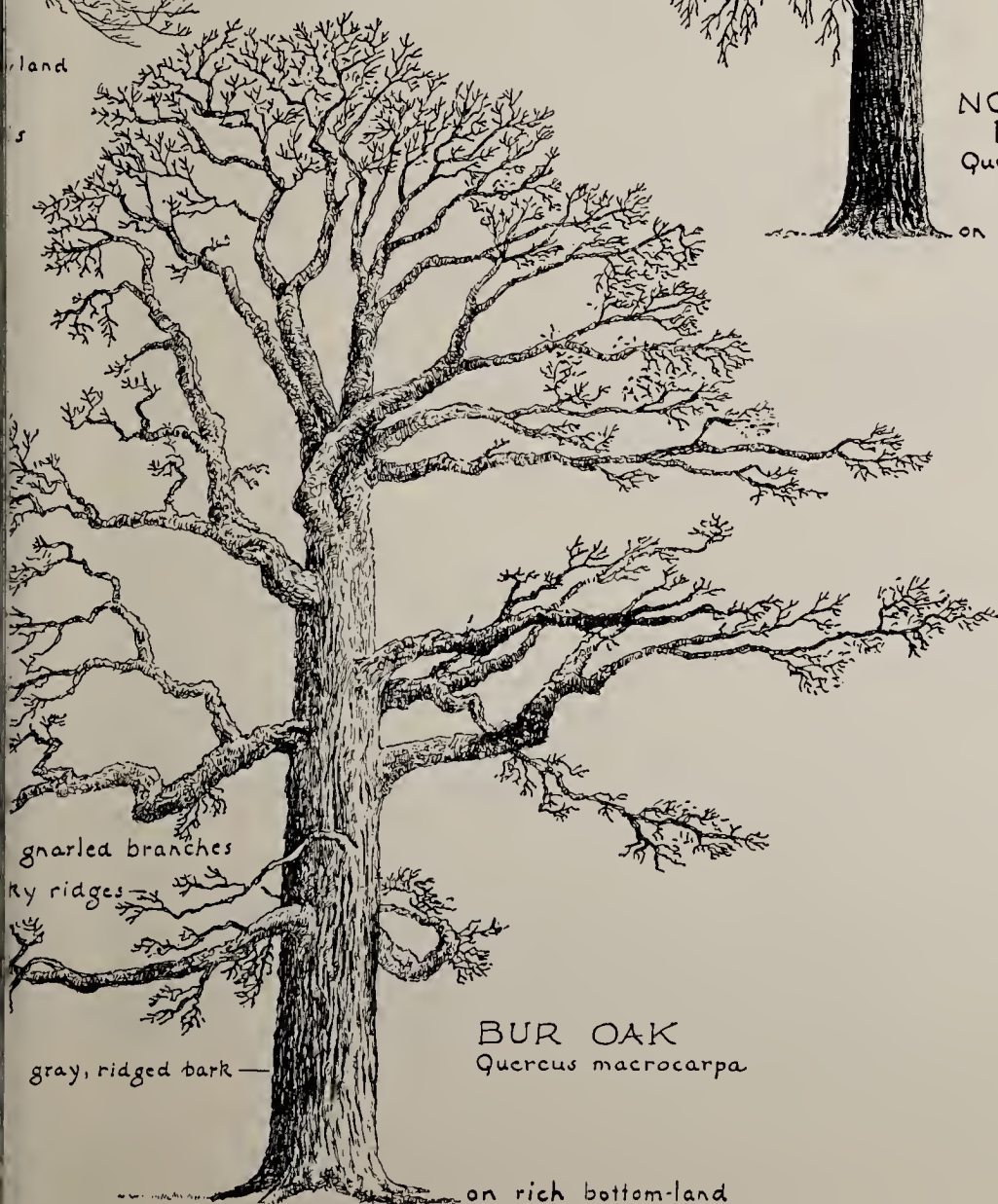
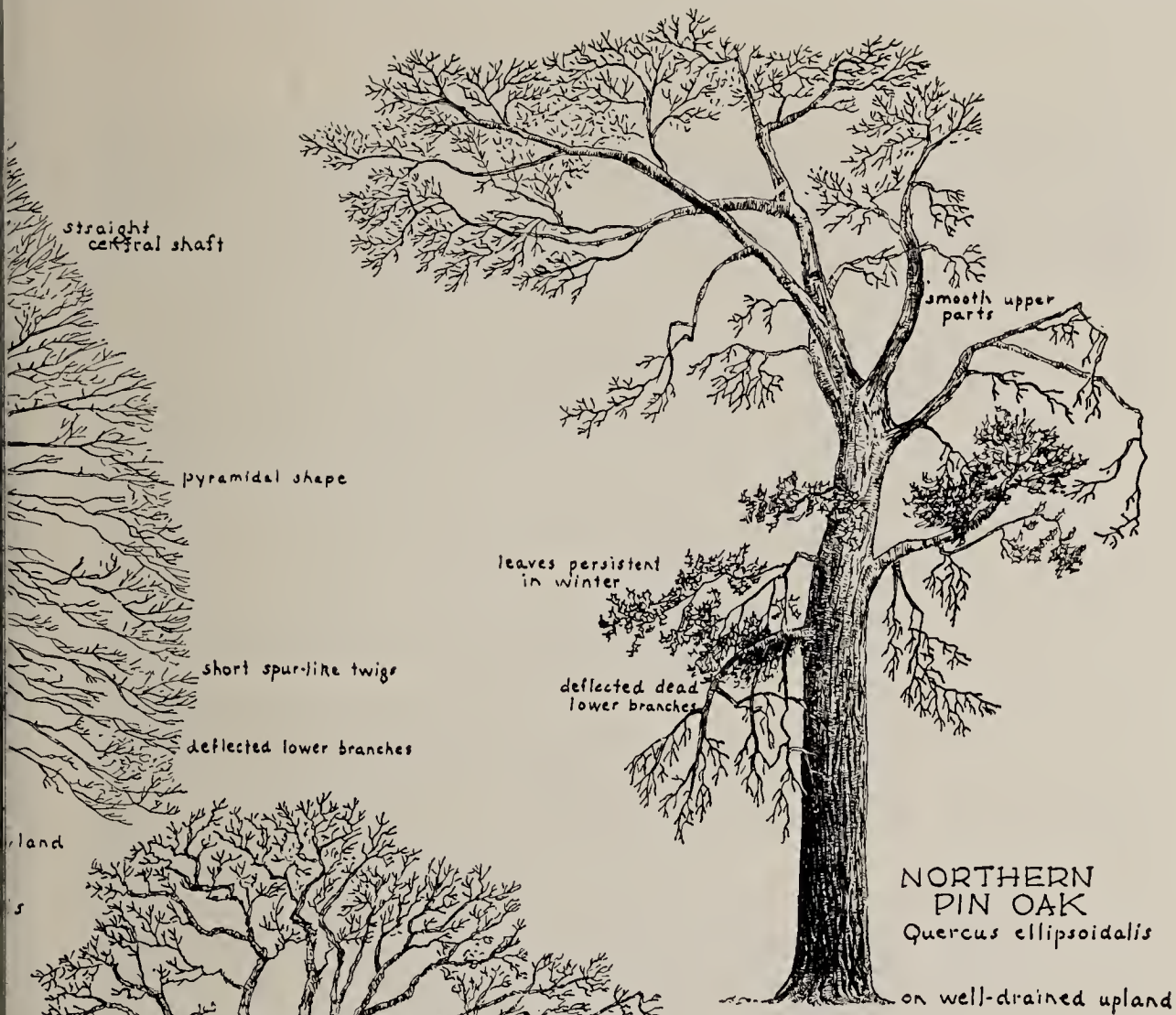


PIN
Quercus



WHITE OAK
Quercus alba

on well-drained upland



It is not difficult to run a key such as this. First, decide which of the first two descriptions applies to your specimen. This will refer you to two other alternatives. Continue to select the proper class until there are no further choices. If you have been careful this last choice should be your tree. If the description does not check, go to the beginning and try again.

GEORGE W. KELLY.

LEAF KEY TO THE OAKS FOUND IN COLORADO

- A. Leaves with bristle-tipped lobes, or unlobed. Acorns bitter, maturing second season. Bark dark, ridged, not scaly, smooth on younger parts. Buds pointed. **BLACK OAK GROUP.**
- B. Leaves with lobes.
 - C. Leaves whitish or grayish-tomentose beneath. Lobes entire or occasionally with few teeth.
 - D. Leaves with usually 5 triangular lobes, obovate, wedgeshaped at base, 5-10 cm. long, thickish. Shrubs 3-10 ft. high. (Not the native Scrub Oak of Colorado.)
 - Quercus ilicifolia, SCRUB OAK.
 - DD. Leaf lobes narrow or obovate, often sickle-shaped, sometimes roundish at base, 3-7 lobed, very variable in shape. Thick brown bark, deeply ridged.
 - Quercus falcata, SOUTHERN RED OAK.
 - (Quercus rubra, Spanish Oak)
 - CC. Leaves green beneath, glabrous or pubescent.
 - D. Leaves pubescent beneath, at least when young, (later hairy tufts in axils of veins), thick, leathery, sinuses shallow or deep. Petioles yellow, stout. Dark, thick, broken bark.
 - Quercus velutina, BLACK OAK.
 - DD. Leaves glabrous beneath.
 - E. Longest lobes of the leaves 2-6 times as long as the narrow middle portion. Leaves lustrous, thin.
 - F. Leaves with conspicuous axillary tufts of hair beneath, 5-7 lobed, few toothed. Sinuses with parallel or spreading sides.
 - G. Leaves thin, 8-12 cm. long. Base of leaf wedge-shaped. Slender petioles. Branches studded with short, sharp twigs. Straight central trunk. Pyramidal shape with deflected lower branches. Dark ridged bark. Acorn 8-13 mm. long, nearly round, cup saucer shaped, 1/3 enclosed. Quercus palustris, PIN OAK.
 - GG. Leaves leathery abruptly-ended at base, coarsely toothed at summit, persistent in winter. Winter buds chestnut brown. Deflected and dead lower branches. Smooth upper parts. Bark gray.
 - Quercus ellipsoidal, NORTHERN PIN OAK.
 - FF. Leaves thin, 8-15 cm. long, with small axillary tufts. Buds whitish-pubescent above middle. Sinuses almost oval or circular, 5-9 lobes. Grayish bark, not deeply furrowed. Acorn enclosed, about 1/3 to 1/2 by cup. 1.3 to 2 cm. long, round or top shaped.

Quercus coccinea, SCARLET OAK.

- EE. Longest lobes almost equaling the broadish middle portion of the leaf. Leaves often dull above. 12-22 cm. long. Lobes narrowing toward margin. Acute-angled branching habit. Dark ridged lower bark and smooth upper limbs. Acorn 2-2.5 cm. high, cup saucer-shaped.

Quercus borealis, NORTHERN RED OAK.

(*Quercus Borealis Maxima*, EASTERN RED OAK.

- BB. Leaves without lobes, entire.

- C. Leaves more than 2 cm. wide, leathery, under side glabrous, persistent in winter. Tree with drooping lower branches.

Quercus imbricaria, SHINGLE OAK.

- CC. Leaves less than 2 cm. wide, under side pubescent. Twigs fine.

Quercus phellos, WILLOW OAK.

- AA. Leaves without bristle-tipped lobes. Acorns sweet, maturing first season. Bark usually gray and scaly. Buds usually rounded.

WHITE OAK GROUP.

- B. Leaves saw-toothed or wavy-toothed.

- C. Leaves obovate or obovate-oblong.

- D. Leaves with 4-8 pairs of veins or lobes.

- E. Leaves 6-12 cm. long, with 4-7 pairs of veins, and usually acute teeth. Low shrubs.

Quercus prinoides, DWARF CHINKAPIN OAK.

- EE. Leaves 10-20 cm. long, with 6-8 pairs of veins, thick, firm, coarsely wavy-toothed, shining above, pale tomentose beneath. Numerous small branches from large limbs. Branches peeling.

Quercus bicolor, SWAMP WHITE OAK.

- DD. Leaves with 10-17 pairs of veins.

- E. Leaves yellow-green above, minutely downy beneath. Lobes rounded.

Quercus montana, CHESTNUT OAK.

- EE. Leaves dark green above, tomentose beneath, wavy margined, wedge-shaped base

Quercus prinus, SWAMP CHESTNUT OAK.

(Basket Oak)

- CC. Leaves lanceolate-acuminate, thick, shiny above, pubescent beneath, rounded base, acute lobes or teeth. Slender petiole. Branchlets glabrous or nearly so.

Quercus muhlenbergi, CHINKAPIN OAK.

(Yellow Chestnut Oak)

- BB. Leaves lobed or pinnatifid

- C. Leaves glabrous or slightly pubescent beneath.

- D. Petioles less than 1 cm. long. Leaves wavy-lobed, usually eared at base. Dark ridged bark, similar to the Black Oak group.

Quercus robur, ENGLISH OAK.

- DD. Petioles 1-2½ cm. long, leaves usually triangular at base.

- E. Leaves glaucous beneath, 10-16 cm. long, 3-4 pairs of regular lobes, usually cut half way or more to midrib. Bark white-scaly. Right-angled branching habit.

Quercus alba, WHITE OAK.

(*Quercus alba latiloba*)

THE BLACK OAK GROUP

[with bristle-tipped lobes, or unlobed
with bitter acorns, maturing second year

EASTERN RED OAK

Quercus borealis maxima



dull above,
glabrous beneath,
lobes narrowing
toward margin,
sinuses about
half-way to
mid-rib.



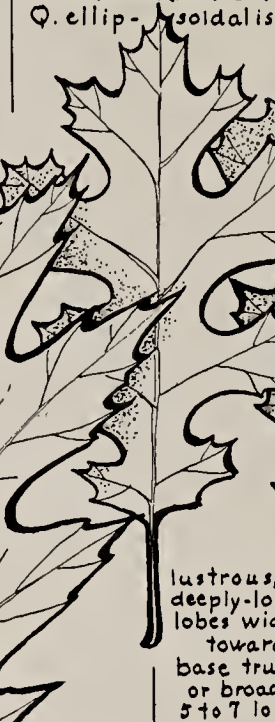
shallow cup,
saucer-shaped,
with glossy
tight scales,
white kernel



buds red brown,
not angled;
twigs red-brown,
smooth

NORTHERN PIN

Q. ellipsoidalis



lustrous,
deeply-lobed,
lobes widening
toward margin,
base truncate
or broad-cuneate,
5 to 7 lobed



top-shaped cup,
enclosing half
of nut,
yellow kernel



buds red-brown,
obtusate at tip;
twigs red-brown

BLACK

Q. velutina



leathery,
thick,
petioles yellow,
sinuses varying
from shallow
to deep



bowl-like cup,
scales form
fringe at margin,
yellow kernel



buds pale woolly,
strongly 5-sided;
twigs red-brown,
lenticels conspicuous

PIN

Q. palustris



thin,
lustrous,
5 to 7 lobed,
few-toothed,
slender petioles,
base cuneate



saucer-shaped cup,
scales with
free tips,
nut often striped



side buds at
wide angle;
twigs red-brown,
smooth

SHINGLE

Q. imbricaria



lustrous
above,
pubescent
below,
persistent
in winter



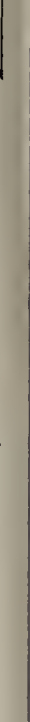
stalked
cup,
bowl-like,
thin



buds brown
smooth;
twigs smooth,
gray-brown

WILLOW

Q. phellos



lustrous,
nearly
sessile,
acute at
both ends



stalked
cup,
shallow,
thin



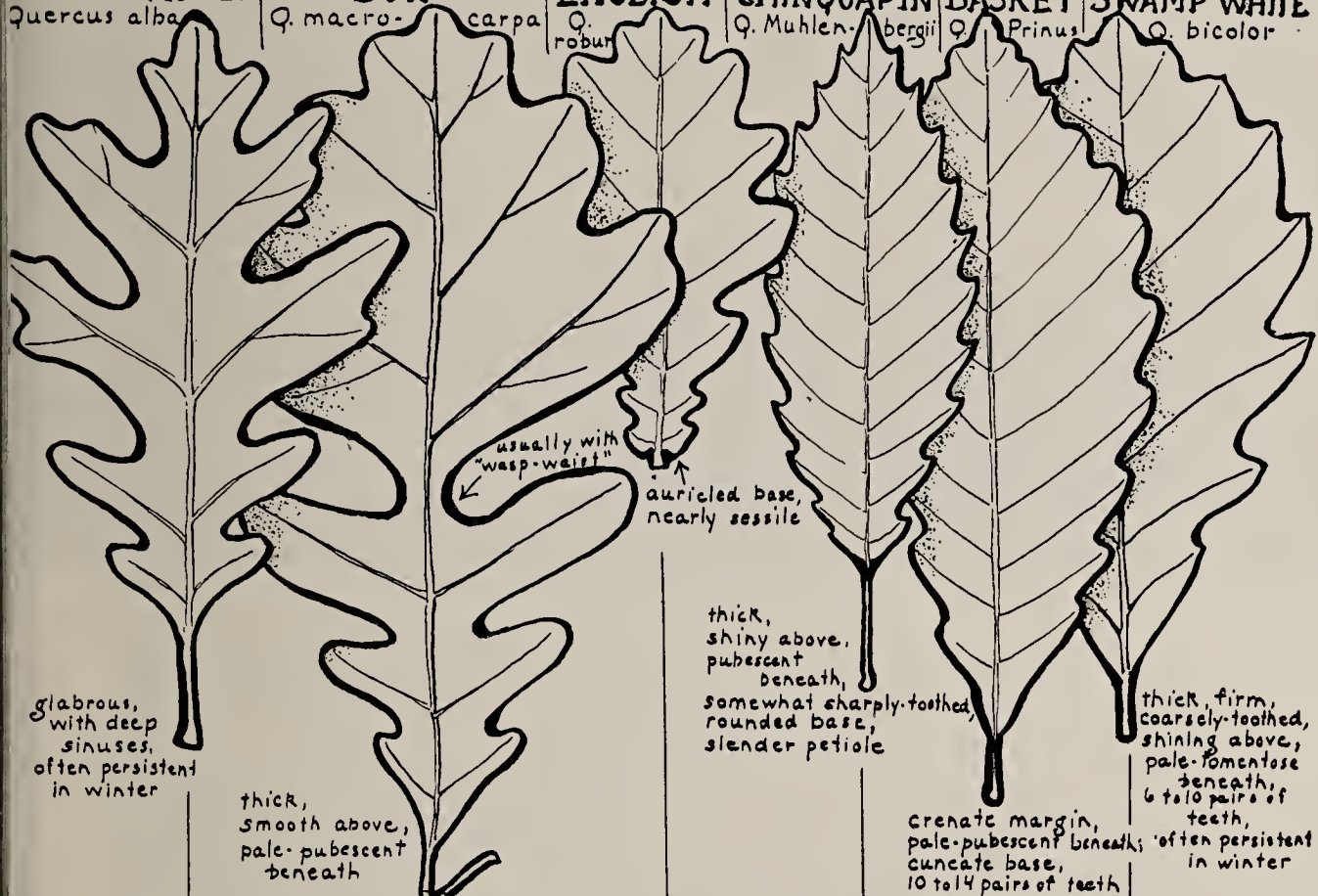
buds brown
twigs
pithy

OAKS

THE WHITE OAK GROUP

[without bristle-tipped lobes
with sweet acorns, maturing first year

WHITE	BUR	ENGLISH	CHINQUAPIN	BASKET	SWAMP WHITE
<i>Quercus alba</i>	<i>Q. macrocarpa</i>	<i>Q. robur</i>	<i>Q. Muhlenbergii</i>	<i>Q. prinus</i>	<i>Q. bicolor</i>



glabrous,
with deep
sinuses,
often persistent
in winter

thick,
smooth above,
pale-pubescent
beneath

thick,
shiny above,
pubescent
beneath,
somewhat sharply-toothed,
rounded base,
slender petiole

thick, firm,
coarsely-toothed,
shining above,
pale-fomentose
beneath,
6 to 10 pairs of
teeth,
often persistent
in winter

crenate margin,
pale-pubescent beneath;
cuneate base,
10 to 14 pairs of teeth



bowl-like cup,
with thickened
wart-like scales,
nut edible

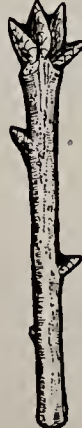
cup fringed,
covering half
or more of nut,
larger in South

cup enclosing
 $\frac{1}{4}$ to $\frac{1}{2}$ of nut,
long-stemmed

cup bowl-
shaped, thin,
scales
indistinct

cup bowl-
shaped,
thickened,
scales wedge-
shaped

usually paired,
cup bowl-shaped,
slightly-fringed,
long-stalked



buds red-brown, smooth;
twigs red-brown, later
ashy-gray;
lenticles pale, conspicuous

buds pale-woolly,
gray-tan;
twigs gray, later
corky-ridged

buds brown;
side buds
divergent;
twigs brown

buds chestnut
brown;
twigs orange-
brown

buds chestnut
brown, hairy;
twigs orange-
brown

buds brown;
twigs yellow-
brown, with
pale, raised lenticles

EE. Leaves usually green beneath, 3-12 cm. long, usually cut more than half-way to the middle, with 3-5 pairs of acutish lobes. Medium to large shrub. (Our native shrub Oaks).

F. Leaves large—at least 6 cm. long.

G. Leaves thin. Direction of lobes lateral.

Quercus submolis.

GG. Leaves thick. Direction of lobes forward as well as outward.

H. Terminal lobes distal to the distal deep sinus make a sort of scalloped, semi-circular fan—or under surface notably pubescent.

Quercus utahensis, UTAH WHITE OAK.

HH. Terminal lobes trifoliate.

I. Tips of lobes rounded.

J. Sinuses cut half way to midrib or less (Surface Dull)

Quercus gunisonii, GUNNISON OAK.

JJ. Sinuses cut more than half way to midrib.

K. Sinuses outlining terminal lobe, cutting as deep to midrib as more proximal ones.

Quercus vreelandii, VREELAND OAK.

KK. Sinuses proximal may be more deep than terminal sinus.

Quercus gambeli, GAMBEL OAK.

LL. Tips of lobes acute.

Quercus novomexicana, NEW MEXICAN OAK.

FF. Leaves small—less than 6 cm.

G. Leaves with undulant margins or dentate with prickles.

Quercus undulata, WAVYLEAF OAK.

(including *Quercus pungens*)

GG. Leaves coarsely dentate with prickles. Distal margin of the lobes practically at right angles to the midrib.

H. Base of Leaves rounded.

Quercus venustula.

HH. Base of leaves cuneate.

Quercus fendleri, FENDLER OAK.

CC. Leaves pubescent or tomentose beneath, green above.

D. Leaves 6-12 cm. long, light green beneath, deeply pinnatifid. Petioles 1 cm. or less long. Branchlets pubescent or tomentose. Large shrub to small tree.

Quercus utahensis, UTAH WHITE OAK.

DD. Leaves 15-30 cm. long, white tomentose beneath, lyre-shaped, thick smooth above, variable. Corky ridges on some twigs. Gray ridged bark. Gnarled Branching habit.

Quercus macrocarpa, BUR OAK.

Double-page cuts of oak trees on preceding pages loaned by Morton Arboretum, Lisle, Ill.



MILWAUKEE'S ARBORETUM

The accompanying pictures show some details of the arboretum which the Milwaukee Parks Department has developed in Whitnall park. The arrangement of all plants is first for their beauty and next for their educational value. Everything is plainly but inconspicuously labeled with inexpensive tags which can be easily replaced when the inevitable souvenir

hunting predators carry them off.

A pleasant building serves as entrance to this part of the park. In this building is a small library, comfortable seats and rest rooms.

The citizens of Milwaukee and visitors to the city are learning to use this well-kept arboreum and increase their knowledge of the plant material which will grow there. One of the very attractive features of this arboretum is its rose garden which contains around 6000 rose plants.



The Rocky Mountain region is well adapted to the growing of tulips.

TULIP TRENDS

MRS. F. S. MATTOCKS

GARDENERS of today have come to realize the value and usefulness of tulips when planning the massing of colors in the garden. There are so many different varieties which can be used effectively in clumps and groups, in beds and borders, and so give added enjoyment in the cheerfulness and brightness of the color harmony of the garden.

During the 19th Century tulip cultivation received its greatest impetus, due to the expansion of the railways, and so facilitating distribution. It was in 1837 that the first collection of Breeder hybrids was introduced. There were only fully recognized when the Cottage and Darwin tulips became more popular, because it was found that the breeders contributed to a wider range of color, especially with their art shades of bronzes and browns, so lacking in other varieties of long-stemmed tulips.

Cottage tulips were, for the most part, to be found in the old cottage gardens of Britain, and it was the National Tulip Society of England who first sponsored the uniformly colored tulips such as T. *Gesneriana auriantica*, *Elegance* and many others for border planting.

The Darwin tulip originated in Flanders and was grown by the same family for over 100 years, and was named for this family by the late firm of Krelage & Son of Holland, this firm having purchased all rights in these bulbs from the original growers. Darwin tulips are general favorites because of their stronger stems and tones of pinks and salmons which are not found in the Cottage variety.

Parrot tulips were first discovered in 1660, but *Fantasy*, which is still the most popular was introduced in

1910. Since the advent of *Fantasy* from Clara Butt, two dozen new Parrot varieties have been formed, about seven or eight of these varieties are now available at moderate prices.

No garden is complete or has real beauty without early bulbs for color, which brings a realization that winter has ended and the garden is waking from its long sleep. There are the minor bulbs which are the real harbingers of Springtime, then the single and double early tulips, joined by the daffodils, the Triumph tulips, and the May flowering breeders, Cottages and Darwins which complete the cycle of Spring, and extend into the beginning of the blooming of the perennials and roses.

It has been found that for best results a deep planting should be followed. Planting from 12-15 inches is recommended, the plant takes longer to make its growth, and in so doing, is not so apt to be hurt by the early frosts, which so often follow a warm period and which are so prevalent during the months of February and March. Bulbs planted deeper have stronger and longer stems.

For flowers of larger size, a later and longer blooming period, plant in a north site. East and west plantings are quite good, but a south location should be avoided, as our warm February and March weather causes too quick a growth, with the result the stems are short and the flowers small and stunted.

With plantings at different depths, say 15 inches, 12 inches, 8 inches, 6 inches, one can be sure of a rotation of bloom over a longer period of time.

If the same beds are to be used for annuals as well, it is best to lift the bulbs when the foliage turns yel-

low and becomes flabby, and to re-plant them in November. Otherwise you may lose your bulbs unless they are planted quite deep, say 15 inches. Our Colorado soil is generally heavy and clayey, and the frequent watering of the annuals or other plants causes the bulbs to disintegrate and disappear, and the gardener is often at a loss as to why the tulips do not come up the following season.

The bulbs should be lifted for drying as soon as the foliage has turned yellow and flabby and the stem can be bent near the bottom of the plant without breaking it. When dug, place in the shade immediately or cover with burlap, for if exposed to the sun or wind while moist a destructive action takes place and the interior of the bulb becomes a gelatine-like mass.

To dry the bulbs cut off the leaves to about four or five inches, place in a semi-darkened room where there is a circulation of air. Spread them out about four inches in depth, sprinkle with tobacco dust for aphids and with sulphur for mildew. Turn weekly and in this climate in from four to six weeks they should be dry enough for cleaning and storing. You can tell if they are ready by the crispness of the roots and outer skin. Remove the roots and they will usually fall apart, so enabling one to separate the large bulbs from the small before storing, making it easier when ready for replanting.

Place the bulbs in perforated sacks and dust again with tobacco and sulphur and hang in a darkened room with a temperature of about 55 degrees. Usually November is the time for replanting but when the winter is open and warm as we often find it in this region, they can be planted as late as the middle of December.

That tulip growing is becoming more popular in America is proved

by the popular demand which has brought into being the newly organized National Tulip Society, Inc., of America, and by the many tulip shows which have been held this year in various parts of America. Outstanding among these held this year was the Atlantic Tulip Show, April 8th-9th. At this time 100,000 tulips were in full bloom throughout the city. These had been donated by the Associated Bulb Growers of Holland, while in Hunt Park just opposite the Auditorium Annex where the show was being held, 25,000 special varieties of tulips were in full bloom.

Boston held its Tulip Show on March 15th and Dallas, Texas, staged their Tulip Show on March 6th-12th, while in Holland, Michigan, their annual festival nationally known as "Tulip Time" extends for four days in May, whenever the blooms are at their best. Pella, Iowa, has its Tulip Festival, May 13th-15th. Orange City with its 2,000 inhabitants puts on a Tulip Festival each year, when the entire population appear in Dutch costume.

Colorado is planning to organize its local Tulip Society chapter in the very near future, and then we, too, can plan for our annual Tulip Show.

The National Tulip Society has presented a very comprehensive list of judging points for a standard of tulip judging, which embraces "Specimen or Cultural Judging Points," "Standards for Arrangement," in several classes as Tulips Predominating, Niche or Shadow Box, Table Arrangements, Period Decoration. Also rules to govern a tulip display.

These official standards will be published in the National Council of State Garden Club Handbook of Flower Show Judging, and will replace the schedule originally promulgated by the Royal Horticultural Society of Great Britain many years ago.

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A MAYOR APPRECIATES TREES

A Talk by HON. FRANK ZIEDLER, Mayor of Milwaukee, Wisconsin,
at the National Shade Tree Conference, August 24, 1948.

FRRIENDS of the National Shade Tree Conference: I happen to be by profession a civil engineer and I have often recognized that there seems to be some conflict between the engineering profession and those of you who are engaged in tree culture and tree preservation. The average city engineer or highway engineer has a definite destination. He wants to put through a road. He knows the nicest way to put through a road is to follow his transit lines and his investigations in the field and put it through irrespective of what obstacles, such as trees, may be in the way. You know, of course, very often the community protests and wants to save the trees in the path.

I happen to be, however, an engineer who favors also the tree side of the question. I say that for this reason: The value that trees give to property, the value that they give to city life, is not easily measured. Oh, yes, it is very fine to put through a nice new paved street, clean, bright, shining sidewalks on both sides and pavement in the center but if there are no trees there I can assure you from my observation in the city of Milwaukee that that street will eventually become a slum street.

The only way you can really preserve property values is not by piling brick on brick or building the most clever masonry artifice you can build, nor by building fine buildings, no matter how beautiful they may be architecturally but by seeing that they are landscaped properly and, of course, the key feature of any landscape job is appropriate and proper placing of the large-size trees.

Interestingly enough, early this spring I called upon the city nursery.

I suppose they wondered why I went there. Actually I went to the city nursery to see what facilities it had for expanding a tree planting program in the City of Milwaukee, not only shade trees but fruit trees.

Milwaukee has a large newspaper which has been very properly promoting a better city from the garden viewpoint and the viewpoint of the green life. It has opposed and is continuing to oppose not only the slum conditions but it has also accepted the positive side of the program—proper planting. It has published many pictures of individuals who have taken vacant lots alongside of them, planted them properly. Every place had shade trees and flowers of various kinds in their shows so they have become an asset.

I realize a basic substance to keeping up the value of a city is the plantings of that town and we in Milwaukee are going to have in the future to give better consideration to the type of plantings that we have and to the type of landscaping that is represented in our city. Without that, the processes of degeneration and deterioration set in. The balance of human life, of animal life against plant life is important to preserve.

I hope that the time will come when our city will have a forest mass in the center of the city somewhere as a balance against the intense concentration of human life and human activity.

Oh, I know the problems you face are very difficult and very complex, the problems of not enough water for trees and the tree borders along the streets, the problem of obnoxious gases put out by our modern vehicles which destroy all types of trees.

These, indeed, are grave problems but I am confident that organizations such as yours will solve them to the benefit of our cities and in solving them you will make for all of us a better life. So whatever I can do as mayor of a town such as this to encourage you to think of the problems of trees in cities, let me do so at this time because trees are important to healthful and clean city life—almost as important as clean human beings. That, of course, you understand is no exaggeration. Take out the masses of trees and the masses of green matter and you will have a city that degenerates into slum areas very rapidly.

So while you think of the other problems you have, the problems of treating trees of their diseases, of how to handle them, how to transfer them, and so forth, I hope there is some portion of your program which will think of trees in relation to cities and will come up with a sound problem

of development that all cities may follow in order to maintain that balance of life that is so necessary.

VERDANT VERSES

THE TREE

A tree has so much dignity—
Does not react emotionally.
Its leaves may flutter in the wind,
But one could hardly say it sinned
Because they waved to you and me.

It likes to shelter us from sun
Or from a rain that's just begun.
It's such a friend in time of need—
All that big tree from just a seed;
To tell it secrets is such fun!

KATHERINE PAULL,
Littleton, Colorado.

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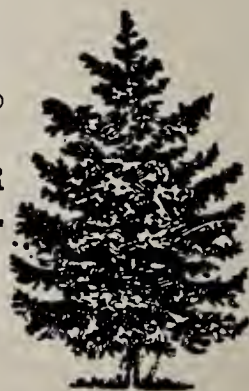
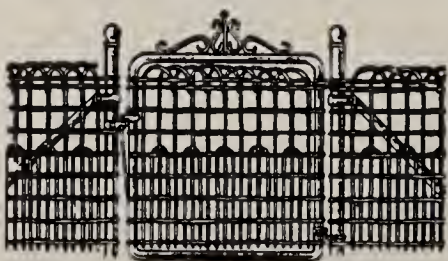
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No, this is not City Park in Denver. It is Franklin Park, Columbus, Ohio. The picture was taken in 1946 when only a few trees had died. Now all the elms are gone, and this means half of the trees. Think what this would mean to our parks. We must

become more conscious of the value of our trees and take every precaution to preserve them. This will require trained men on the job to discover pests and disease before they get out of control.

AS FOR HOUSE PLANTS, TRY A LITTLE PIO- NEERING

By ALLEN H. WOOD, JR.
Reprinted by Permission from
Horticulture

It is time to think about house plants again. Old standbys that were plunged in the garden all summer, collected scads of fresh air, health and innumerable insects of one kind or another should now be taken in.

A bit of inspecting and spraying will pay now—for insects enjoy a nice warm house, too.

Some of the annuals have left the garden for the living room, too. You are planning on petunia, snapdragon and ageratum flowers for months more. Keep them cool and clip them.

It is proper that you keep and coddle the old friends in the window garden, yet new interest is added by acquiring a few new and different potted pets.



THE WEEK-END GARDENER

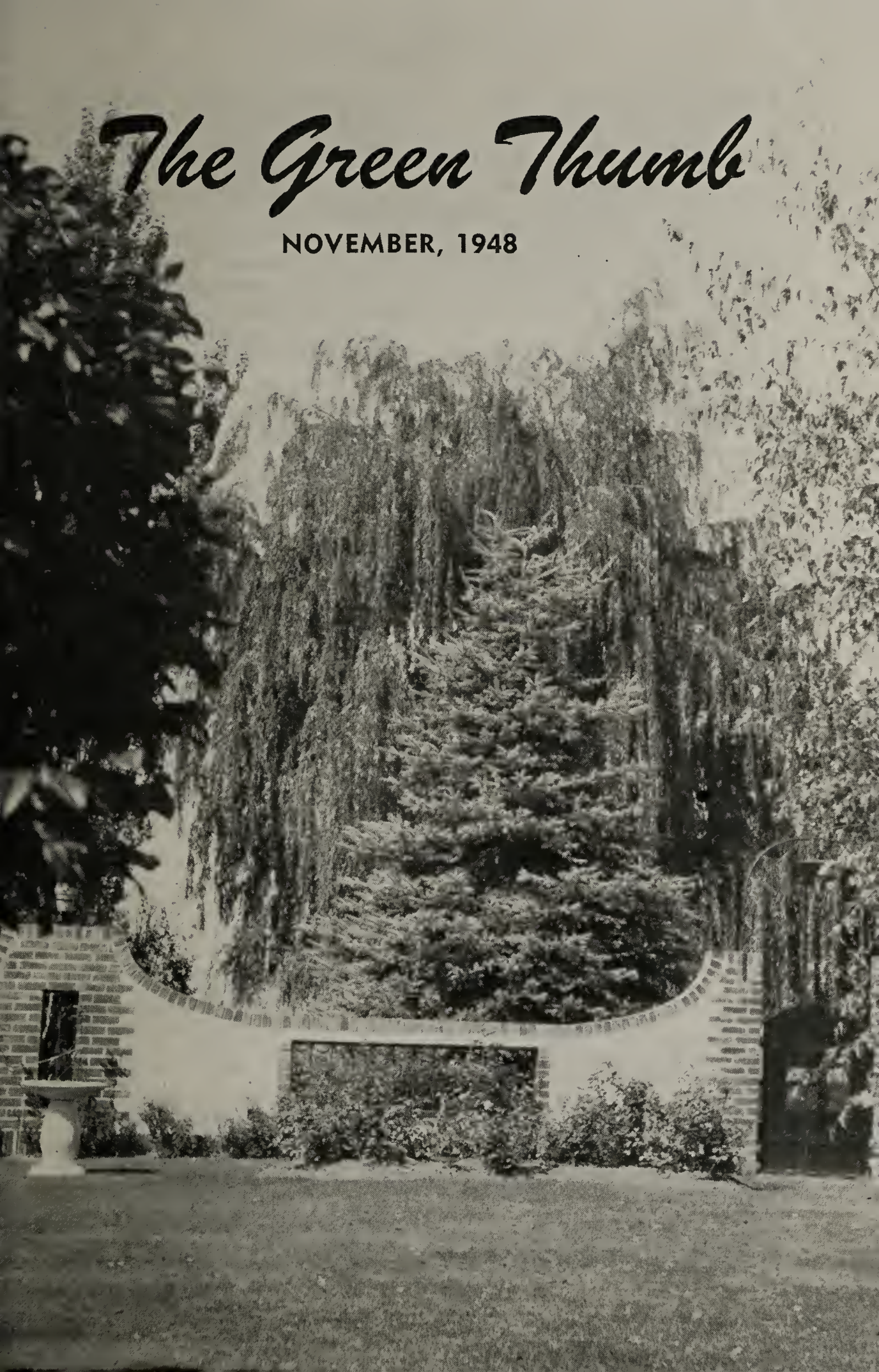
THE cool breeze this morning reminded me that fall is here and that we may have severe weather any time. The light frost a few nights ago did not harm anything around the house but it will not be long now until all tender things are killed. I noticed some rather small and young-looking petunia plants in the border that I believe I will pot up and bring into the house. Possibly there are other things like larkspur and sweet alyssum that will also bloom in the house throughout the winter. I'll try several things. I'm going to fix up a little better place in the south window where I can take better care of my house plants. I'll arrange a shade to cut off the severe sunshine at times, and I'll also arrange places where I can keep quantities of moist peat moss to keep up the humidity.

While I am bringing in peat to use indoors I'll also arrange to get another load to use outdoors in the garden. I believe that it is good mulch for tender plants and then next spring I can cultivate it into the soil and improve its texture. The Oldtimer tells me that I should not fertilize much until all the plants are completely dormant, as it might induce them into an unnatural growth which would not mature before severe weather. He told me to hold off on the water and fertilizer until after the plants lost their leaves.

Mom, come here, there are insects of some kind all over these leaves on the dogwood. What they are doing here just as the leaves are ready to fall is more than I can figure. I'll have to call the Oldtimer. He says that this is a common, but almost unknown occurrence. These are aphids which have a sudden splurge of activity at this time, then lay a lot of eggs which are dormant until just as the sap begins to flow in the spring. Then they come to life and do a great deal of damage to the new leaves before anyone is looking for them. He says that now is the time to spray them and prevent them from leaving any eggs. He also says that aphids will work like this on the Snowball bushes and Euonymus shrubs. I thought that our insect troubles were all over for the season. Maybe I'd better look at the junipers and see if there are still aphids on them. We should be able to put our garden to bed for the winter soon.

The Green Thumb

NOVEMBER, 1948



PROGRAMS AT HORTICULTURE HOUSE

Indoor meetings this month will be conducted by various garden clubs. Friday, Nov. 5, 10:30 A.M. The Civic Garden Club will conduct a program. The Fall Garden and Chrysanthemums. Mrs. A. R. MacDonald.

Friday, Nov. 12, 10:30 A.M. The Home Garden Club will be in charge. Their program will include a demonstration on making dish gardens, by Mrs. E. C. Horne and Miss Lula Morse. Mrs. G. Hance will also demonstrate dry flower arrangements.

Friday, Nov. 19, 10:30 A.M. The Rose Bowl Garden Club will stage a demonstration of winter and holiday arrangements, conducted by Mrs. C. A. Hedley and Mrs. A. Risley.

Friday, Nov. 26, 7:45 P.M. The Men's Garden Club will have charge of a program, subject to be announced later.

NEW DIRECTOR APPOINTED

We are pleased to call attention to the appointment of Milton J. Keegan as a director of this association, to fill the vacancy caused by the death of John Gabriel. Mr. Keegan's contributions to horticulture were noted in the "Orchid" of last month.

COMMITTEES

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A SUMMERTIME SNOWBANK

D. M. ANDREWS

THE other day I parked by the roadside and with Graflex camera and tripod, prepared to record a flower portrait. Because the place happened to be a part of the Rocky Mountain National Park a park ranger soon appeared and brought his motorcycle to a stop. While engaged in making some adjustment on his machine he glanced casually in my general direction. The pygmy tripod with short but stout legs evidently aroused his curiosity but discreet in the performance of his duty, he was soon satisfied and went his way.

The Rocky Mountain National Park presents Nature in rugged contours. Relieved from sternness by a

plentiful tree growth it is carpeted everywhere in the summertime with verdure mingled with flowers. Even above timberline the Arctic willow steals the sharpness from rocky outcrops with mats of sage green. Flowers everywhere vie with each other in lavish display for the few weeks allotted to them and like the deer, elk and mountain sheep have nothing to fear of friend or stranger.

Not far from where I stopped lay a slowly diminishing snowbank. The time was July and the altitude nearly 12,000 feet. It was still of large extent, an acre or more but recently had covered a larger space. At the lower end a stream of cold water





*These two pictures show clearly how the Glacial Buttercup blooms through the snow.
Photos by Selma Grout Bussell.*

gurgled away among the rocks but shortly reappeared in a little brook bordered with lush vegetation. This could be followed by the eye a long way down the slope where it joined similar brooks from other snowbanks to form a part of Fall River, tributary to the Big Thompson.

At the edge of the snow around the entire bank the uncovered earth seemed quite sterile except for a few budding plants pale from absence of sunlight but showing activity. At a little distance were expanding buds, leaf growth and flowers—according to the lapse of time since their release from arctic winter. Their pageant from snow to early summer might cover in extent ten paces or often less.

At one edge where the snow was thin but compacted to ice was a large colony of the Glacial Buttercup, *R. adoneus*, with some of the great yellow blossoms fully expanded while the roots were still ice bound. No

green foliage enlivened these nor yet the still greater number gilding the brown earth just beyond. Only a few yards away were plants with mature leaves and fully ripened seeds. This illustrates the briefness of the season allotted to alpine plants for the completion of their annual cycle. Nor is this much assured them because the varying law of averages decrees that the recession of the snowbank is not sufficient every year to uncover all the plants under its margin before snow falls again. Two or three years may elapse before their divinity, the glorious sun, again deigns to show his face.

It has been explained of certain alpine plants that they "push through the bed of snow which their stems, thanks to their dark tint, are able to pierce". (Correvon: "Rock Garden and Alpine Plants", p. 25). Quite certainly this explanation does not cover the case of the Glacial Buttercup. Some activity doubtless continues within the



Globeflower, Trollius albiflorus.

plant for a time after being enveloped by the first snow of autumn. Few, if any, of the Rocky Mountain alpenes are completely dormant except while held in the grip of winter frost. At the coming of the first snow the ground is seldom frozen. Some alpenes brought down to the plains just before this time will burst into bloom within a week. Nascent flower buds have advanced by late summer to a condition requiring but the slightest mildness above normal temperature to bring some of them into full flower. Buds of the Glacial Buttercup on stems two inches in height are often observed after frost has turned the scanty growth of the alpine tundra to rich brown and their blossoms are

no rare sight. It is quite evident that such buds safely embedded in the snow would not need to push upward nor would they resist the impulse to expand once their plump roundness was warmed by the sun's rays. Fortunately the mighty frosts of the high altitudes have no such blighting effect upon these jewels of the snow as we observe in our gardens at the event of unseasonable cold.

Such overlapping of normal cycles among mountain plants is apparent in other ways. Always it bears evidence to the marvelous adaptability of plants to their environment. When the process is reversed and we transfer them successfully to the bland conditions of a garden we are pleased



Parry's Primrose, Primula parryi.

to call it, "acclimatization", a term to which the original adjustment of the plant to slowly changing conditions is clearly entitled.

The summertime snowbank is al-

ways the center of a most interesting floral community. Following after the Buttercup are its relatives the Caltha and Trollius. The white Marshmarigold, *Caltha rotundifolia*, pushes up

its pale buds and unfolds its blanched foliage at the edge of the snow. The buds take on a tinge of blue but open pure white with a full center of golden anthers. Meanwhile the crumpled foliage, still wrinkled, has expanded into oval leaves of dark green. In the same cold bog at the lower edge of the snow, but a little later, comes the Globeflower, *Trollius albiflorus*, at first pale sulphur but turning to white. The plant forms good clumps and its flowers compare in size with the best garden types. Where the drip from the snow gathers into a rivulet of considerable volume were *Senecio* and *Mertensias* in their succulent growth as of early springtime although in full bloom farther down. Midway were several large clumps of Parry's Primrose, *P. parryi*, their rosettes at the water's edge; the magnificent umbels of crimson flowers scarcely requiring to be heralded by a penetrating fragrance, rich but heavy.

The glory of this floral community pertains to his royal highness and is known as Kings Crown, *Sedum integrifolia*. It is quite deliberate in appearing each springtime as if to avoid plebeian association. It affords the most intense color note anywhere to be found and is rare enough to yield an unfailing thrill upon meeting it. Its foliage is a peculiar translucent green like jade and its crown of stems each set with a jewel of ruby, turning to garnet, is unforgettable.

Everywhere as the season advances there is a minor accompaniment of flowers, less dominant but in detail no less beautiful. As the excess of early moisture dries away, light showers freshen almost daily the host of miniature alpine forms, flower gems of many hues gather into a mosaic setting of subdued green. Lichen covered rocks in unusual tints add to the illusion. Innumerable tiny blossoms blend away toward the cold grey

peaks and units in an alpine harmony of color and fragrance.

Associated with the summertime snowbank is the phenomenon known as "red snow". It is seen only at high altitudes and is due to a microscopic alga. Most of the algae are green in color except the massive forms commonly known as seaweeds. This one propagates freely upon the surface of the snow and while individually red it is seldom of sufficient abundance to lend more than a pale rosy tint to the more or less grimy surface of the snowbank.

The Sangre de Cristo Mountain range, Spanish for "Blood of Christ", owes its name not to the so called "red snow" but to the rosy glow so often visible for only a few moments at sunrise or sunset depending upon the direction of the observer.

DO YOU HAVE A BIRD FLOWER GARDEN?

The afternoon is really warm. I'm sitting on the east porch in the shade near a red honeysuckle vine. A small form whirs past me—yes, it's "Pete"—the humming bird that has spent the last six summers with us getting his evening meal from the honeysuckle. An electric light wire overhead makes a nice stop-first to scout the surroundings, then to rest or clean his bill. He sticks out his needle-like tongue scraping carefully each side of his bill on the wire. This is really ceremonious and takes place several times during the meal.

A small corner of the back yard has been given over to wild sunflowers and cosmos. Next year it will be bordered by blue corn flowers. Gold finches, house finches and several members of the warbler family spend all day feeding here, chattering in a slight undertone in "finch" all the while. It is especially interesting to

see the early season scouts looking for the first seeds, or taking in the prospects for summer feeding. The corn flower seeds ripen first, then sunflower and then the cosmos, the cosmos being especially adapted to the gold finches' lighter weight bodies.

Last year a flock of several hundred cedar wax wings, delightfully colorful birds, took refuge for several days in this corner during a late spring snow storm. When they checked out, so had all the berries on the hawthorn and mountain ash.

Orioles, tanagers, and just the other day an evening grosbeak, drop in from time to time in search of fruits and seeds, which reminds me—I must make a note to put out some threads next spring. This year the warblers shredded the cloth strips I tied to the plum tree to keep the finches from eating the buds.

A garden's a delight, but a bird corner—never a dull moment.

ELSA LAYBOURN.



THE WEEK-END GARDENER

Mom, this ground is dry in the garden. Don't you think that it should be watered? Yes, I know the Oldtimer said to go easy on the water and fertilizer during the late fall, but we are having too much frost now for the plants to make any more growth and I believe that everything should have a good soaking before it freezes up. I am going to try a lawn soaker hose to see if I can't get the soil wet deep down without washing the surface. The Oldtimer tells me this is especially important in Colorado because we have so much open, sunny weather which draws the moisture out of plants. While we are thinking about the effect of our bright sun and dry air, I believe that I will put up a lath shade to the south of that little white pine we put out last spring, and wrap the trunk of the little linden tree.

Before the ground freezes too hard I must hill up the roses. Ouch, that long stem reached out and stuck me in the back. Bring me the clippers, I'm going to cut them all down. O.K., if the Oldtimer says that only the straggly stems should be cut back until spring, I guess I can wait till then.

Now I am going to take time to dig the dahlias and glads and fix them up for the winter. I'll leave the tops on the glads and put them in some place where they can dry out a couple of weeks before I clean them up. I'll pack the dahlias in peatmoss or shavings and put them where they will not be too warm, or dry, or cold or wet. Oh, yes, the Oldtimer reminded me to treat the glad bulbs with naphthalene flakes or DDT to kill the thrips.

The crucial problem of our generation is to safeguard, maintain, develop, increase and wisely use for the common benefit of mankind the natural resources of the earth.

THE IMPORTANCE OF CONSERVATION

Extracts From Significant Statements by Inter-American Authorities

THE Inter-American Conference on Conservation of Renewable Natural Resources which held its sessions in Denver September 7-20 will go down in history as one of the most important conferences ever held. It is very encouraging to see and hear the delegates from twenty-one American countries get together and exchange ideas and experiences in a friendly way. The preaching of conservation has been left too long to the "Nature nuts." Now it has suddenly become apparent that the survival of our civilization depends on stopping wasteful practices and building back our abused resources of soil, water, forests and wildlife.

It was regrettable that more people could not hear these addresses by the outstanding scientists and leaders from all over the American continents. There were not large enough rooms available to accommodate many visitors and it was felt that we should not have so many local people in attendance that the Latin American visitors would feel in the minority. We feel it as our definite responsibility to bring the essential things of this conference to the attention of as many people in this area as possible, so have arranged to give short paragraphs or condensations from many of the outstanding papers. Eighty-six experts were scheduled to read papers and many others gave short unscheduled talks. The complete report of the proceedings of the conference will be published in a few months.

The talks were divided into six sections. Extracts from the first three of these sections as well as from the concluding resolutions will be given in this issue and other extracts in two succeeding issues. We will start with

some paragraphs from the Declaration of Principles as adopted on the closing day of the conference.

"As representatives of the government of the Americas we have met to take counsel with one another about the wise use of the earth's resources. Our deliberations have been guided by our awareness of the gravity of the situation in which the peoples of the world now stand. Everywhere in the world natural resources have been depleted by ignorant and reckless exploitation that has ignored the inexorable natural laws which maintain them and this depletion was disastrously accelerated by the recent world war. Throughout the world steadily increasing populations have put an ever-increasing strain on the dwindling resources. These two forces, each of which re-enforces the other, have now brought mankind to an almost critical point. The challenge of our time is that we must arrest and reverse them or face the fact that the very existence of civilization will be brought in peril.

"In some areas millions of people must live below a tolerable level of subsistence and nowhere in the world has a proper living standard been achieved for everyone. Moreover, mankind is oppressed by fear of further wars. Much of this fear originates in hunger and want, in which lie the seeds of disorder from which might come the wars we so greatly fear. We believe that on the road toward peace the only guarantee of peace is a careful development, utilization and protection of renewable natural resources. We firmly believe that the earth is rich enough to insure a better living standard for everyone, provided that measures for such de-

velopment, utilization and protection are immediately adopted and adhered to by all from now on. We believe that, although our knowledge is incomplete, inexact and intermixed with error and misconception, nevertheless mankind now knows enough to devise effective measures and apply them with success. We believe that it is within our power to maintain civilization, to advance farther than we have now come toward the comfort and stability that are mankind's oldest dream and to pass on to our successors an increased and strengthened natural heritage now being drained by our wastefulness. Finally, we recognize that in comparison to other parts of the world, the Americas have a greater natural endowment and have been less exhausted by war and exploitation. This good fortune lays on us a responsibility for leadership in meeting the challenge that we may by no means avoid or escape.

"The crucial problem of our generation is to safeguard, maintain, develop, increase and wisely use for the common benefit of mankind the natural resources of the earth."

"The catastrophe that threatens civilization results from man's failure to live in harmony with the principles that govern his environment. Man has abused the earth that is his principal source of wealth; and the earth therefore dispassionately makes his existence even more precarious and threatens him with extinction. Until he brings himself to live in harmony with nature there is no hope for peace or plenty or progress."

We give the following significant extracts from the talks of twelve men, in the first three sections: "Human Populations and the Productive Capacity of the Land, "Renewable Resources and International Relations" and "Land Use and the Social Sciences."

H. L. SHANTZ,
Santa Barbara, California.

"Cut-over lands of much of the eastern part of this country and parts of the northwest stand as monuments to ignorance and greed. These valuable timber areas could have been maintained permanently in producing forests had proper methods been employed. Clear-cutting and burning have left them practically deserted.

"The only limit to land cultivation has been the failure of a project. Forests were felled in windrows and burned to get them out of the way. Productive grass sod has been turned under with little consideration for the value of the natural crop. Important acreages of our most productive cropland are in unproductive occupation by home sites, cities, reservoirs, rights-of-way, air fields, factories and other industrial establishments. The productivity of the land seems never to restrain its non-productive use. Gold dredging and strip-mining have turned the rich soils of valleys into a rubble of coarse rock and gravel.

"The decline of the land is precipitate and demands our utmost efforts in conservation. But even if the trend could be reversed, progress would still be relative and hence insignificant in the face of the overwhelming reality of the increase in the earth's human population."

MANUEL ELGUETA,
Head, Plant Industry Department,
Inter-American Institute of
Agricultural Sciences,
Turriable, Costa Rica.

"All the countries of Latin America are fundamentally agricultural. However, no public conscience has been built up about the necessity for conserving the land capital.

"It is of great importance to in-

tensify agricultural research in Latin American countries. This research is to be organized for the study of land use, to be complemented with survey programs for the purpose of making an inventory of problems created by the use of the land."

CLINTON P. ANDERSON,
Former U. S. Secretary of Agriculture,
Albuquerque, New Mexico.

"The ratio between renewable resources and human populations refers to the simple problem of whether individual people are able to provide themselves with life necessities and whether their descendants will be able to do so. The ratio affects peace through economic relationships. There is evidence that hunger breeds war and war breeds hunger. We have hope that the opposite is also true: that plenty breeds peace and peace breeds plenty.

"The world's people are using resources as if they still had unlimited room to move around. To insure ourselves against disaster in the future we must not only stop the losses but make sure that what resources we have provide adequately for our wants. There is reason to hope that we can do this.

"The earth's population is increasing but no one knows where or if it will level off. In the past we have been able to counter balance population pressure by increased agricultural production. We have brought new land under cultivation and introduced new machinery, crops, insect control methods and other technological improvements. These have increased our effective acreage but the process can not continue indefinitely.

"With proper use and distribution the world now has the resources to support its people. Our worry begins when we ask: At what level and for

how long? Although freedom from hunger may not be synonymous with peace, both objectives lie in the same direction. The same compass points will guide us toward our goal."

MAURICIO NABUCO,
Brazilian Ambassador to
the United States.

"Nature provided us with plentiful resources and took immense measures to conserve what she made. It is now time to find what we can do to help ourselves.

"The destruction of renewable resources will bring poverty, and poverty always produces political instability. With abundance we will have peace and the magic route to this seems to be conservation."

WILSON POPENOE,
Director, Escuela Agricola Panamericana,
Tegucigalpa, Honduras.

"A stable and prosperous economy entails the cultivation of the right crops on the right land and the encouragement of cultural practices which will make for a permanent agriculture. New crops and new methods are important in raising living standards in the tropical American republics, many of which are essentially agricultural in nature."

AMOS E. TAYLOR,
Director, Department of Economic
and Social Affairs, Organization
of American States,
Washington, D. C.

"In the period of its tremendous growth, this country was so preoccupied with prosperity that it failed to recognize the loss of valuable resources which, under a constructive program, could have been conserved and replaced without impairing the national welfare. Attention was di-

rected away from the fact that the economic world was rapidly becoming more interdependent.

"In some circumstances we may ultimately be forced to face the question whether the possession of essential resources by a nation shall necessarily create absolute title to them. The principle of trusteeship may have to receive wider application if falling water is to be absorbed by the soil and if the remaining soil is not to be carried off by the periodic rush of water poured from the sky."

NATHAN L. WHETTEN,
Professor of Rural Sociology, Dean
of the Graduate School, Uni-
versity of Connecticut,
Storrs, Conn.

"A survey made in the United States in 1934 indicated that erosion had badly damaged or ruined about 282 million acres of crop and grazing land; and it was estimated in 1946 that about 500 thousand acres of land were being ruined in this country each year.

"Once the seriousness of the erosion problem has been determined and it has been decided what agricultural and forestry practices must be followed in order to remedy it, the sociologist should endeavor to suggest procedures for translating social policy into action. This involves an understanding of the relations of individuals to the groups in which they live. To some extent it involves the problem of motivating men to sacrifice immediate personal gain of a temporary nature in the interest of the welfare of future generations.

"To the sociologist, the problem of conservation appears largely one of social control. Stated simply, the question is essentially this: How can the immediate interests of individual owners of renewable natural resources

be identified with the interests of society and future generations?

"There is need for a vast educational program that will acquaint the public with the nature and seriousness of the problem; and there should be a general diffusion of knowledge regarding conservation techniques. Knowledge relative to techniques is very important, for many conservation practices bring relatively prompt and profitable returns to the private owners of resources. When these methods are widely known and used they will be passed on to future generations without the necessity of purposeful social control. They will be embodied in the folkways of the culture.

"Education is also needed, however, to emphasize the social, as opposed to the individual, benefits that derive from conservation. Many conservation practices do not benefit the individual owners of renewable resources, yet are of vital importance to society as a whole. Moreover, education is needed to put across the idea that the present generation should assume responsibility for the resources that will be available to future generations.

"Legislation to be effective must grow out of the attitudes, the folkways and the mores of the people. Only then can it be enforced in a democracy.

"Thus a great deal can be accomplished through wise legislation. But the problem of conservation is much too complex to be solved by legal enactments alone. Rather the solution will require a combination of all of the forms of social control involving both persuasive and, to some extent, coercive methods. The ideals of conservation must be incorporated into the value systems of the people and translated into routine customs and traditions. This is a slow process but

it will pay big dividends both to contemporary society and to future generations."

HUSTON THOMPSON,
Federal Trade Commission,
Washington, D. C.

"Man in the United States today focuses his mind on Russia and perhaps over-dramatizes the subject. The haunting atomic bomb makes his imagination stand as still as if mental rigor mortis had set in. Nevertheless, his body whirls in riotous action, like Job's Satan, who went hither and thither and up and down. Strange it is, that the supreme tragedy of the ages is acted before his *unseeing* eyes.

"At his feet, in the center of the stage, man plays this drama out, continuously, stupidly, almost inevitably, yet never seeming to know how to escape it. He slaughters his forests and loses the top soil. Instead of parallel furrows, he ploughs diagonally, thus hurrying the life-giving soil down the hill into the stream. In the past he has killed the beavers so as to gloss the hats of dandies and watched the dams of these animals go out and with them the protection of our mountain coverage. From the Rio Grande south, he has burned the tops and sides of the mountains, leaving them to be swept clear of soil when the rainy season comes.

"While populations increase, the soil diminishes. Yet the approach of the 'Fifth Horseman' does not seem to disturb him. He is never satisfied until his wanton action has brought him to want. Then he has moved on to greener pastures to re-enact the tragedy.

"Now there are no longer any green pastures, except in rare distant areas.

"Instead of looking up to the hills from whence cometh his help, he battles the mountains as if they were his

enemies. As the trees topple and the soil goes down the streams, choking the channels of the rivers, increasing the floods, blocking navigation, lowering the water levels, bringing on dust bowls, man continues to glorify his warrior heroes and to detour from the men of peace who try to save him by saving the soil. As the song goes—'Smoke gets in his eyes.'

"These actions, that through the ages have been so obvious, have always brought on political action and reaction, yet seldom have they changed man's methods. Here and there stand out the acts of brave non-conformists, who have sought to, and stopped this curious inhumanity of man to nature.

"Forest and prairie fires, erosion that fills the channels of the streams—results of man's action on the mountain slopes—know not national or international lines, once the erosion disease begins to run its fevered course in the physical world of conservation."

WILLIAM E. WARNE,
Assistant Secretary, U. S. Department of the Interior,
Washington, D. C.

"It is time to take a long-range view of our ground-water resources. We need both a comprehensive inventory of our ground water and effective legal control which will check excessive development without discouraging the wise use of ground-water reserves. Anything less will deprive future generations of their rightful share of one of our most vital resources."

RAYMOND E. CRIST,
Department of Geography,
University of Maryland.

"In North America the settlers adopted the policy of wearing out

the land and moving westward. Eventually they brought under cultivation the richest soils of the continent but they are finding that even these will not maintain their productivity under indefinite misuse.

"History furnishes many examples of people who built their culture on a system of land management that led directly to their ruin. This should be instructive to countries which still have land wealth to use. They should institute surveys and create programs to stop erosion and to promote land building through the use of locally adapted crops and methods."

R. M. EVANS
Board of Governors, Federal
Reserve System,
Washington, D. C.

"We who have responsibilities in the monetary and credit field are particularly interested in the wise use of our resources, human as well as material. History has proved that human welfare is closely related to the way we care for our resources. Only by their prudent use can we provide the basis for a higher standard of living. Monetary and credit policy can contribute to but cannot by itself assure high levels of production and employment. High production is only possible on a permanent basis if our resources are used wisely. We must remember that in the future not only do we want higher living standards but also that the population will be larger than at present.

"Although the importance of a wise use of our resources seems self-evident, we in this country have only recently appreciated the dangers and taken steps to correct them. Earlier, there were fresh lands to turn to when existing soils were no longer productive. Now there are very few new lands to bring into cultivation and we are be-

ginning to realize the importance of maintaining the lands we have and of restoring the soils that have been damaged."

JOHN E. DOERR,
Chief Naturalist, National Park
Service, U. S. Department
of the Interior,
Washington, D. C.

"The term "national park" denotes:

'Areas established for the protection and preservation of superlative scenery, flora and fauna of national significance which the general public may enjoy and from which it may benefit when placed under public control.'

"The National Park System, representing less than one percent of the total area of the United States and its possessions, is actually a very small unimpaired natural reserve for a country once so rich in a variety of natural resources. It is within the scope of this Conference to foster and encourage throughout the Americas the establishment and preservation of national parks. They are one means of accomplishing the urgent and important conservation work necessary to avoid world-wide economic and cultural poverty and starvation. Through attracting tourists the national parks of a country bring in new money and serve as a medium for better international good will and understanding. Natural features of national significance can be of great importance in drawing to any country a favorable volume of tourist trade. The national parks are excellent places for presenting effective conservation education programs."



Send us names of your friends who would enjoy the Green Thumb.





WHEELER NATIONAL MONUMENT

THE accompanying pictures were taken on September 5th this year, when a party of five backpacked into Wheeler National Monument from near Wagon Wheel Gap. An attempt was made to get in to the monument earlier in the year to check the plants and flowers found there, but at that time high water prevented the trip in. This is certainly a most spectacular group of rocks. The lower layers of soft white rock have weath-

ered away in fantastic forms. One could spend many days photographing the unusual formations. No road leads to this place at present, so backpacking or horse packing in are the only ways to get to the monument. There is some talk of building a road but it may be just as well to keep some of these wild places where those who appreciate them must work to get there. These soft rocks might soon be ruined by many careless visitors.





The Needle. One of the strange formations in Wheeler National Monument.

MODERN TRENDS IN ROSE GROWING

DON'T do too much unnecessary fussing in your rose garden! Don't have so many plants that you cannot enjoy your garden. Don't make elaborate preparations such as digging out deep places and backfilling with rocks, cans and rubbish. These are some of the errors that present-day rose growers are counseled to avoid. There are, however, many positive recommendations.

On account of our general alkalinity of soil in the Denver region, special emphasis must be given to fertilization; to supplying humus to the soil through applications of manure, peat moss and compost; to supplying iron sulphate or sulphur for correcting chlorosis. Ammonium sulphate may be used at times. If there are doubtful or poor soil conditions it is wise to have an analysis made. Above all make sure of plenty of humus!

Denver is fortunate to have so few pests. Mildew can be treated with copper or sulphur preparations; preferably copper in a spray. Leafhoppers can be controlled by DDT; aphids by nicotine (with soap) or rotenone; red spiders with HETP. For rose sawfly or borers, use gum to stop up the holes.

Watering should be on the ground surface rather than overhead to avoid mildew and blackspot.

Pruning is usually taken care of by the weather in winter, so only dead and weak wood need be taken out. Save 10-15 inches on the live stalks when possible. Climbers may be laid down to protect from winter-kill and then only dead wood cut out.

For planting, good stock is a must. Planting can be done in the spring or fall depending on the stock and the care given but the plants should

be hilled up if in the fall. If the grower has a method that has proven successful, he should stick to it but I recommend that the plants be spaced at least two feet apart and a big hole dug so that the roots can be spread out and not crowded. The hole should be carefully watered and filled in, with the union just below the surface.

FRIENDS OF THE LAND WILL ORGANIZE CHAPTER IN DENVER

At a dinner held recently in Denver several prominent soil conservationists, including Hugh H. Bennett, chief of U. S. Soil Conservation, spoke on the work of FRIENDS of the LAND. The society has a membership of over 8,000 and has 31 chapters scattered all over the United States. It is hoped that a chapter will soon be organized here.

It is primarily an educational society, trying to enlighten the public on matters pertaining to the increased productivity of soil, coupled with the conserving of soil, water and forests. The aim is to increase the teamwork between private citizens and the various governmental agencies active in the conservation of renewable resources.

Several of the officers of the society are nationally known authors, including Louis Bromfield, Malabar Farm; Dr. Fairfield Osborn, Our Plundered Planet; William Vogt, Road To Survival. The books and magazine articles of these writers and others are widely read. The society has received great assistance and encouragement from Garden Clubs and other women's organizations. In fact it works with all existing local and national conservation groups.

IT TAKES GOOD DESIGN, PLANTS AND MAINTENANCE TO MAKE A GOOD GARDEN

THE home of Mr. and Mrs. Lou W. Appeldorn at 2055 Raleigh, Denver, is a good example of the result that can be obtained from careful attention to the above three points. The nice way that plants have been used to set off architectural features gives character to these grounds. The artistically designed wall shown in these pictures gives a fine background for the shrubs and vines planted against it. The summer house and fireplace in one corner, formal pool in another, naturalistic pool and rockery, and appropriately placed bird bath all give definite points of interest to build picture vistas around.

Suitable plants, trees, evergreens,

shrubs and flowers have been carefully selected to make just the proper effect and not become too soon overgrown. The final touch—maintenance—has been well done, so that it brings out all the character of the design and plants.

Mrs. Helen Fowler is largely responsible for the basic design, but Mr. and Mrs. Appeldorn have secured plants and help in maintenance from many good nursery and landscape people. Large estates may create wonderful landscapes by the expenditure of immense sums of money, but when some of these same effects are created on a small city lot it is worth calling attention to.

A good example of how architectural features form a background to be ornamented with plant material.





An important feature of any garden is the gateway where first impressions are formed.

Picture on cover shows view of garden wall from the street.

*The summer house and picnic area dominate one corner of the garden.
Photo by M. Walter Pesman.*



SMALL FRUITS FOR COLORADO

GEORGE W. KELLY

MANY sections of the state do not have a long enough season to allow the large tree fruits to mature, homes built on small lots do not have room for them; so here are listed some plants which produce good fruit and are hardy, but take up little space, and may at the same time be valuable for their landscape effects.

Grapes

The best all-around grape for Colorado is Beta (or Alpha). They are hybrids of wild grapes and the Concord. Size and quality intermediate. Will bear almost every year, while Concord, Niagara, or Diamond will do well to produce a crop once in three years. Not much for eating raw, but the juice and jam is very good.

Raspberries

Spring bearing red raspberries are largely raised commercially, but the work of covering and uncovering is a strong reason against them. Latham and Chief seem to give good results. Black raspberries will grow sometimes but are generally not worth the effort. Blackberries and dewberries are no good.

The everbearing red raspberries are generally the best for the home garden. The St. Regis is a small well flavored berry, but short cropper. The Indian Summer is in good favor as they produce good summer and fall crops even when the plants are not covered and are allowed to freeze back each winter. Good size and fair flavor.

Strawberries

Strawberries should be in every garden. Most of the standard one crop kinds will do well here, but the

favorites for the home garden are the everbearers. Gem and Mastodon are both liked. For high altitudes the experiment station at Cheyenne has put out two new hybrids of the wild and cultivated sorts called Cheyenne No. 1 and Cheyenne No. 2. They have the hardiness of the wild and about half the size of the cultivated.

Gooseberries

Wild gooseberries grow at all altitudes, and while small and tart are valuable for mixing with other fruit. The cultivated kinds occasionally produce good crops, but are not reliable. The variety Pixwell is an especially good kind for difficult places.

Currants

Currants are not reliable every year, but will occasionally produce good crops. Red Lake and Perfection are favorites. Of course, the wild species grow well but the fruit is inferior.

Prunus Japonica

Has only been tried in a few places. Has white to pink flowers in spring and small red fruit (sometimes) in summer.

Manchu Cherry

Formerly called Nanking Cherry or Chinese Bird Cherry. A beautiful tall ornamental shrub in bloom, fruit, or just in leaf. The fruit has flavor and character superior to large cultivated cherries, but the plants do not always bear because they bloom very early and the fruits are frequently killed by frost.

Sandcherries

The Hanson Bush Cherry is really

an improvement over the species in quality of fruit. They are of low growth, beautiful in flower, and every few years will bear immense quantities of fruit. Hardy almost everywhere.

Plums

Some of the plum and cherry hybrids are very valuable because they will bear early, and will survive drought, Opata, Dura, Oka, Compass, Tom Thumb are the names of a few kinds which will produce under difficult conditions.

Elderberries

Are appreciated by birds and are good for pies and sauce.

Amelanchier

Called service berry and Juneberry. Delicious fruit, but of slow growth and hard to transplant. Tolerates drouth and poor soils.

BOOKS IN THE HELEN FOWLER LIBRARY

Every student of horticulture is familiar with Liberty Hyde Bailey's "Cyclopedia of American Horticulture" published in 1900 and his "Standard Cyclopedia of Horticulture" published in 1928. "The Silva of North America" by Charles Sprague Sargent is another important source of information. First published in 1890, it was reprinted in 1947 with the permission of Dr. E. D. Merrill, Director of the Arnold Arboretum of Harvard University. In the preface Dr. Sargent wrote, "Books . . . are only guides towards obtaining a knowledge of trees. To be really understood, they must be studied in the forest; and therefore, since the plan of writing this Silva was formed, I have examined the trees of America

growing in their native homes from Canada to the banks of the Rio Grande and the mountains of Arizona and from British Columbia to the islands of southern Florida. I have watched many of them in the gardens of this country and in those of Europe and there are now hardly half a dozen of the trees which will be described in this work which I have not seen in a living state." The fourteen volumes are superbly illustrated with figures and analyses drawn from nature by Charles Edward Faxon and engraved by Philibert and Eugene Picart.

We have recently acquired "The Bradley Bibliography," compiled at the Arnold Arboretum under the direction of Charles Sprague Sargent by Alfred Rehder and published in 1911. This monumental work in five volumes is a guide to the literature of the woody plants of the world published before the beginning of the twentieth century. Dr. Merrill wrote of Alfred Rehder, "In the bibliographic field he has done more than any living individual in the whole field of horticulture."

We are very pleased to have these books in the library for study and research.

It is gratifying to note that public sentiment for the preservation of parks and monuments and recreational reserves is slowly but surely gaining ground. Even the "practical men" are learning that only animals can survive on food and shelter alone. Humans must have something more—some of those intangible values they find in the peace and beauty of the natural landscape. Commerce would not long thrive in the world in which there was no artistry, no imagination. —By Randall Henderson, in *Desert Magazine*.

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BLUE STAR HIGHWAY MARKERS

THE pictures here show the new stone markers recently erected at the Kansas and Utah state lines of the Blue Star Memorial Highway. This is one section of the national route from Maine to California. The project was sponsored by the National Council of State Garden Clubs. Mrs. Frank E. Neal of Lafayette, Colo., is state chairman and has worked long and hard to get these markers put in place. In addition to these state-line

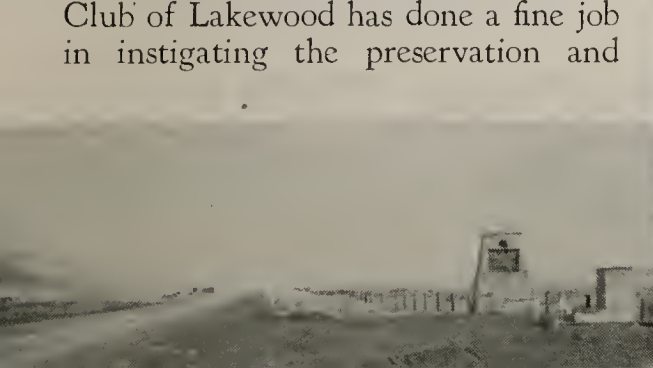
development of the two acre roadside park just west of Denver. This is to be suitably landscaped and will be known as "Panoramic Point". Other garden clubs might well follow this good example and take as their



markers there are smaller signs at the entrance to each town that the highway passes through. It is the plan of the Federation to encourage beautification of this route throughout the entire state. The Suburban Garden Club of Lakewood has done a fine job in instigating the preservation and

work project the beautification of some section of this highway. Highway 40, being the main east-west road through the state, is a good place to start this important improvement program.

Do you enjoy the Green Thumb? Tell your friends about it. The more members we have, the more we can do.





Fireplace, built in connection with the Marker at the Colorado-Utah site on the Blue Star Highway.

VERDANT VERSES

FROM DARKNESS TO LIGHT

What's going on within the earth?—
Bulbs swelling underneath;
Then thrusting up and pushing forth
From bulb to tall green sheath.

And in this sheath a bud's concealed,
Which comes out in the Spring,
With lovely scent and hue, that only
Sun and rain can bring.

Who'd guess that hard, white, little
bulb
Such beauty would attain?
This is a mystery of God
We try to solve,—in vain!

KATHERINE PAULL,
Littleton, Colorado.

THE WEEK-END GARDENER

Hi Mom, what's to be done in the garden this afternoon? The perennial beds are worked over, the ground is soaked up for winter and the bulbs brought in. Most of the leaves are off and blowing around the garden which reminds me that most perennials need some much as protection in the winter. Sure, I know, that a mulch is not intended to keep things warm, but to keep them cold, or rather to prevent sudden changes in temperature. Where I can do so I'll put on some good manure, then it can be a good winter protection and also be leaching good chemicals into the soil all winter. Where I can't safely put on manure I'll give a good coating of peatmoss or compost. I believe that there will be some manure left over. I'll put it on the lawn. It may do some good between now and spring. I'll save the chemical fertilizers until spring.

Did you know that there were two kinds of leaves on this bush? No, I see now there is a nice little Chinese elm tree growing up right in the center of this spirea bush. When could that have started there without my seeing it? I'll bet that there are more of them around the place and probably some boxelder sprouts, too. I've noticed them in the neighbor's yard, but don't see now there is a nice little Chinese elm tree growing up right in the center

That old willow tree has finally quit, so I'll get some tools and help and take it out. That should be a good chore this nice cool weather.

I've been noticing those black clouds in the west all day. What does the weather man say is coming? Snow and colder. All right we will take time right away to take in the garden furniture and put away the tools. Before the weather gets any worse I'm going to lift those two stepping stones and level them up.

Come on winter, we are ready for you.

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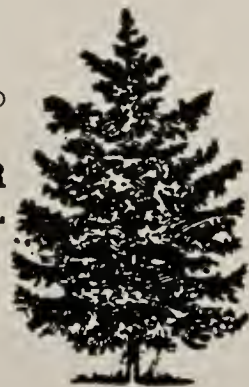
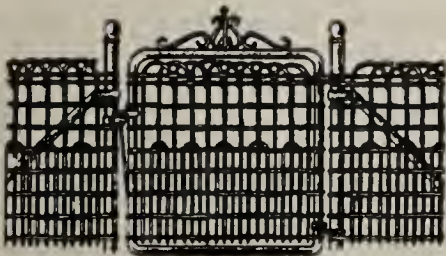
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A FAVORITE COMBINATION OF PERENNIALS

By FRANCES BINKLEY

ONE particular combination has become a favorite of mine simply because of the difficulty in achieving it. A long time ago I came on the suggestion that yucca and delphiniums would make a good border combination. And so I tried it, for the first time, in a desert-like garden on the banks of the Snake River in Idaho. The soil was a heavy clay, the summer was very hot, and water for the garden had to be carried a long way in a pail. The yucca flourished, with lovely five-foot spikes of creamy blossoms, but the delphiniums became discouraged, as did I after carrying a good many pails of water. So the yuccas were left standing alone—in a bed of portulaca.

Later I tried the combination in Ohio, on the shore of Lake Erie. Again the soil was a stiff clay. The delphiniums, with some pampering and protection against pests and heavy summer rains, did well. The yucca dwindled and departed, apparently displeased by the late, cold spring and heavy, wet soil.

Now for the third time, in Colorado where yucca is native and delphiniums are at their happiest, I am trying to bring these two together in a border, for contrast in color and form and texture of foliage.

The yucca was a favorite of the Victorian English garden. "A graceful and elegant plant," said William Robinson, the great naturalistic gardener, who praised its exotic foliage and liked to see it standing alone, with a background of shrubs and perhaps some tritomas nearby for color contrast. To visualize our yuccas taking a place of honor amid the soft green and lush growth of an English garden is to have an entirely fresh view of the plant. We must admit it is a stubborn and unyielding plant too, hard to kill, yet reluctant to flower after moving. Delphiniums, on the other hand are responsive and gracious, pleased with a high altitude and cool summers. The absence of drenching summer storms here allows the tall blue-flowering stalks to reach their full perfection.

ROCKY MOUNTAIN HORTICULTURAL CONFERENCE, 1949

PLANS for the conference have been almost completed.

The first forenoon session, February seventh, will be given over to a discussion of New and Unusual plants for the Rocky Mountain area, led by Dr. A. C. Hildreth of the Cheyenne Horticultural Field Station. Professor A. M. Binkley will be chairman of the first afternoon session when discussions will be held on a wide range of landscaping problems. The evening

session will be devoted to the problems of City Forestry.

At the second morning session prominent national experts will tell of the new developments in tree care. Demonstrations of new equipment and tours of the city greenhouses will be arranged for the second afternoon, weather permitting. The annual meeting of the Association will be held on the second evening. A short talk will be given and entertainment provided.

A new feature of this conference will be the educational and commercial exhibits set up all around the room. All sessions will be held at the Silver Glade Room at the Cosmopolitan Hotel.

Other experts who will participate in the program include: Charles Drage from Fort Collins; Prof. L. R. Quinlan from Manhattan, Kan.; Dr. L. W. Durrell from Fort Collins; Curtis May from Beltsville, Md.; R.

R. Whitten from Columbus, Ohio; R. K. Alman from Cedar Rapids, Ia.; Jess L. Fults from Fort Collins; Mrs. T. O. Guptill from Cambridge, Mass.; Dr. Thomas L. Martin from Provo, Utah; Harold W. Lathrop, George Carlson, Ivan Wood—all of Denver. Many local people will assist in the discussions.

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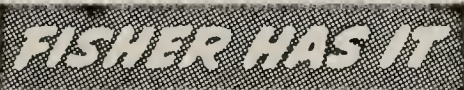
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“WISDOM FROM THE DESERT”

Plant life is not as adaptable as human life. We humans range over the earth from the Arctic circle to the equator—and while we do more or less complaining about drastic changes in temperature, our bodies soon adapt themselves, and eventually our minds become reconciled. But in the plant world each species has its own zone of life, and it will not survive too drastic a change in soil and climatic environment.



One evening recently I accompanied friends on an overnight camping trip to a little pinyon forest 4200 feet up on the Santa Rosa slopes. After a month on the floor of the mid-summer desert we wanted to enjoy the novelty of sleeping under blankets.

One learns more about the character of an associate on a single camping trip than in months of association in an office. Life in a primitive environment brings out traits not revealed in normal association.

We had flapjacks for breakfast. One of my camping rules is that each member of the party be given the option of making his or her own hotcakes. Making camp flapjacks is a fine art. It takes much practice and I have a chronic distrust of tenderfoot campers who volunteer to cook the hotcakes for the crowd. Generally they don't know the first rule—the proper regulation of the fire. I don't like burned flapjacks—and so I reserve the right to make my own—and grant the same privilege to the others.

After they've learned to cook 'em to a nice golden brown, the next lesson is flipping them over in the air. That takes courage, faith, good timing and perfect rhythm. Only folks with a little music or poetry in their genes ever learn to flip hotcakes gracefully.

But you don't have to be a poet or a musician to enjoy camping. It is good tonic for the ails of a jittery civilization—even if you have to eat burned flapjacks.—Randall Henderson, in *Desert Magazine*.

COLORADO FORESTRY AND HORTICULTURE

OUR MEMBERSHIP CAMPAIGN FOR THE NEW YEAR

LAST autumn we added many hundreds of new members to the Association which enabled us to expand our services here at Horticulture House and to publish *The Green Thumb* every month. To maintain our usefulness to the garden lovers of Denver and the state it is vitally necessary for us to keep our membership at its present level. And since the demand for information and help in garden, lawn, and shade tree problems has increased tremendously over the past year, it is equally necessary for us to add many new members in order to keep abreast financially of the growing needs.

Our members can help us this autumn in the present campaign for renewals and new contributions if they will spare just enough time to send in their membership renewal for 1949 right away and send in the names of a few friends, not already members of the Association, but who are interested in horticulture and conservation; people who would enjoy *The*

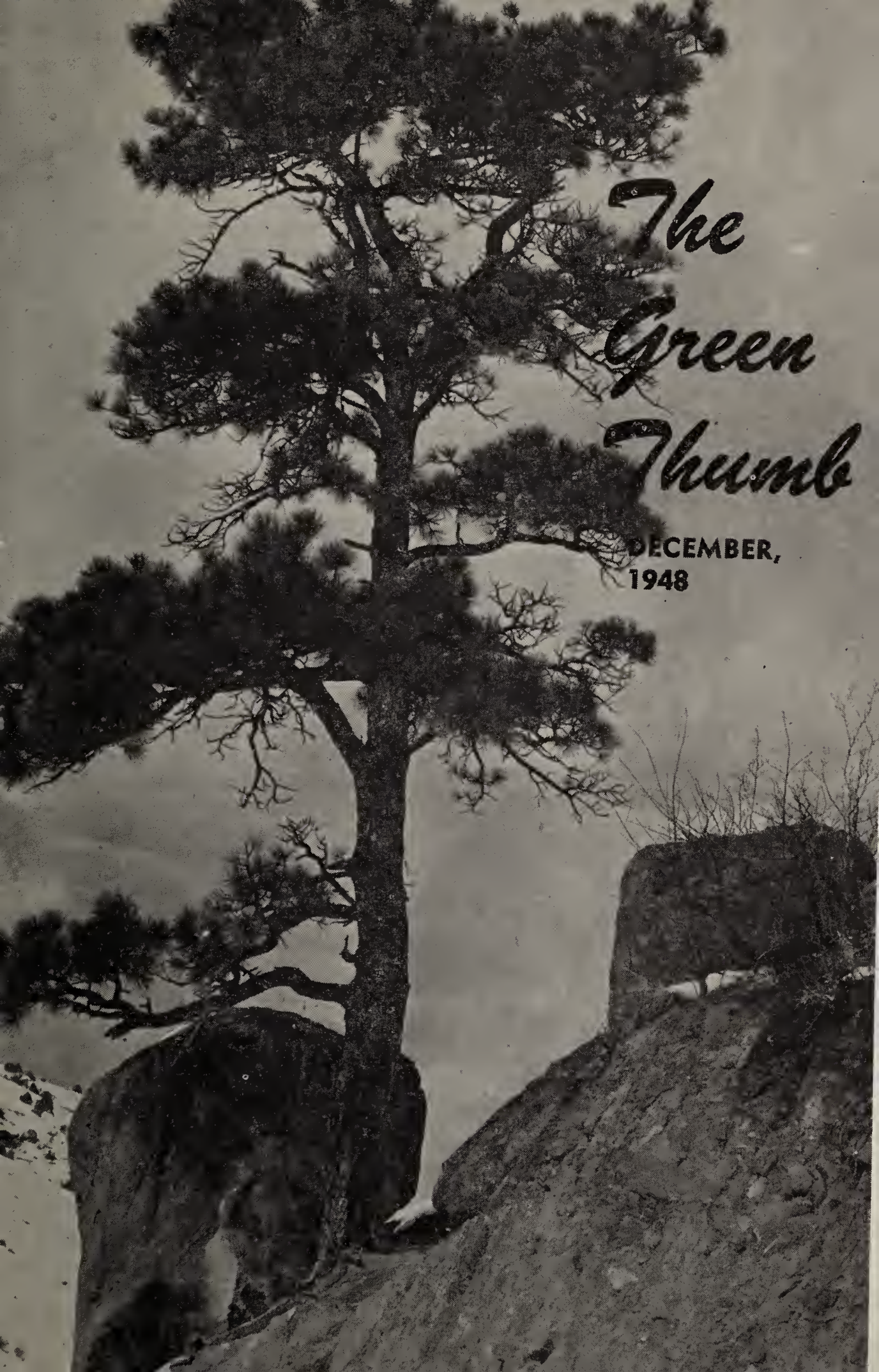
Green Thumb and would benefit by the many services at Horticulture House—the library, the lectures, the summer field trips. We feel that any garden enthusiast is bound to know of others. To help us reach them would be a very practical “donation” from you to the Association and would be much appreciated.

Mrs. Robert M. Perry is membership chairman. Her committee includes Mrs. J. Churchill Owen, Mrs. Kernan Weckbaugh, Mrs. James J. Waring, Mrs. C. Earl Davis, Mrs. Helen K. Fowler, Mr. George Carlson and Mr. Fred Johnson.

The committee to solicit new members is headed by Mrs. Harold L. Roberts, who will be assisted by Mrs. J. Churchill Owen, Mrs. Leonard Van Stone, Mrs. C. Earl Davis, Mrs. Geo. Argall, Mrs. H. Calvin Fisher and Mr. Fred Johnson.

You may either get in touch with a member of these committees or send the name of prospective members directly to Horticulture House.





The Green Thumb

DECEMBER,
1948

MEMBERSHIP CAMPAIGN

As we go to print our membership campaign for 1949 is under way. Many members are assisting, and the committee in charge urges all former members who have not already done so to send in their dues. We earnestly hope every member will consider himself a committee of one to secure new members whenever the opportunity arises, so that the valuable services of "Horticulture House" may grow with the years.

SNOWSHOE NATURE TRIP

All who are interested in seeing Nature in the winter are invited to come on Mrs. Anna Timm's annual snowshoe trip, December 12th. The location will depend on snow conditions, but will probably be in the Jones Pass area. Leave Horticulture House 9 a. m. Bring lunch and a can of soup for the general pot. Register well in advance so transportation can be arranged. Snowshoes may be rented for the day at sporting goods' houses.

AWARD TO HOME GARDEN CLUB

The Home Garden Club of Denver has been notified that it was awarded second prize in the Garden Club Year Book Contest for its 1947 yearbook. This prize which is sponsored by the magazine "Horticulture" carries a cash award of \$25.00. In the letter announcing the award it was stated that the yearbooks were widely studied as a help for other clubs in improving their work.

We congratulate Miss Lula R. Morse, President of the Home Garden Club during 1947, and Mrs. W. E. Pemberton, artist, on this achievement.

ORCHIDS TO FRED R. JOHNSON

Mr. Johnson is a professional forester and at the present time one of the assistant regional foresters of the Denver office of the U. S. Forest Service. In 1905, he entered Dickinson College at Carlisle, Pa., and later attended Yale Forest School, graduating in 1911. His first forestry job (in 1910) was with the Ohio State Experiment Station where he surveyed woodlots in 10 counties.

He entered the U. S. Forest Service, July 1, 1911, as forest examiner on the Arapahoe National Forest in Colorado, went to the Nebraska N. F. in 1912, where he later became forest supervisor. In 1916, he came to the Denver Regional office and for about 13 years was in charge of the tree planting work of the Region. In 1929, he was attached to the Recreation & Lands division where he handled the public relations part of that branch. In 1937, he was placed in charge of a newly established division, Information & Education, where he still presides.

For many years before the reorganization of this Association, in 1944, he was a member of the old Association (Colorado State Forestry) and carried a heavy burden of its existence on his capable shoulders. Besides being secretary and a director of the present organization, he is chairman of the Finance committee, is very active in the Membership committee, and is liaison officer between officers, directors, and staff workers, thereby effectively maintaining peace and harmony in the Association.

Picture on front cover of Ponderosa Pine in Red Rocks Park, by Chas. J. Ott.

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YOUR HELP NEEDED

Beginning with the January, 1949, issue of the Green Thumb we plan two new features. One probably headed, "GOOD GARDENERS," which will take the place of the "ORCHIDS" series of this year. This will consist of notes about the noteworthy practice of some gardener, be they estate owner or helper. Will you please let me know of these people and the good things that they do?

The other feature will probably be headed, "GOOD GARDENING," and will consist of seasonal notes similar to those that we once ran under the head of "THE EXPERTS SAY." This will take the place of "THE WEEK-END GARDENER" of this year.

Please send in a sentence or paragraph about any seasonal garden suggestion that you think worth while.

GEORGE W. KELLY, *Editor*.

The Green Thumb

A Bulletin of the
COLORADO FORESTRY AND HORTICULTURE
ASSOCIATION
Organized in 1884

GEORGE W. KELLY, *Editor*
MRS. C. A. BARBOUR, *Editorial & Adv. Asst.*
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Vol. 5 December, 1948 No. 12

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Term Expiring in January, 1951

George A. Carlson.....Park Supt.
S. R. DeBoer.....Landscape Architect
Mrs. George H. Garrey.....Home Gardener
Fred R. Johnson.....Assistant Regional Forester, U. S. Forest Service
Milton J. Keegan.....Lawyer
Allen S. Peck.....Retired Forester
Earl Phipps.....Simpson Seed & Floral Co.
L. C. Shoemaker.....Retired Forester



Oregongrape, Mahonia aquifolium.

BROADLEAF EVERGREENS

CLAIR ROBINSON

THE plants generally referred to as evergreens are of two kinds; the coniferous, cone-bearing plants with narrow needle-like leaves, that every-

one is familiar with; and the broad-leaf plants with smooth flat leaves that produce their seed by berry, or otherwise, instead of a cone.

The Oregon grape or Mahonia is a beautiful example of the broadleaf kind. It will average four feet in height, is heavy branched, and has large shiny metallic leaves that turn to shades of red and bronze in autumn. The new growth in summer is a lighter shade of green, giving the plant a pleasing effect. In spring, clusters of yellow bloom are followed by dark blue fruit. Oregon Grapes are best moved in late spring, with a fair sized ball of earth, and do best when planted in an east or north exposure. They are good when planted with other evergreens, making a showy contrast. Used with Pfizers or other spreading evergreens, they will make such a grouping more interesting. These plants may be grown in full sun but in such a location will lose their leaves in autumn. When given plenty of water, fertilizer, and cultivation, they will be admired in your garden.

Pyracantha or Firethorn is another good broadleaf evergreen with small leaves and open foliage. Following the white blossoms, clusters of bright orange-red fruit remain all through the winter. The Firethorn grows long shoots, making a good trailing plant under windows and over doorways. It can be kept trimmed to a low bushy form and is a good companion to other evergreens. It should be moved in spring with a good ball of earth and, like the Oregon Grape, it will be happiest in a north or east exposure.

Euonymus patens sieboldiana also needs a shaded location. It has rich green foliage and beautiful orange berries. Given some support this plant will serve as a pillar at the side of a building. Euonymus radicans grows in either sun or shade but is at its best in shade. It is bushy in form and sometimes the leaves are slightly variegated. Euonymus vegetus, an evergreen vine, has orange-red berries,

needs support and will grow up to thirty feet high. Euonymus Kewensis is a prostrate growing evergreen vine with small dark green foliage; a splendid plant for rock gardens or ground cover, and does well in any location.

We have so few broadleaf evergreens which are happy in Colorado, that I am going to mention English Ivy as one. This is a very beautiful evergreen vine that should be planted in a shady location and will remain green when other varieties have shed their leaves.

Consult your local nurseryman about these broadleaf evergreens. He has made a study of them in regard to the unusual growing conditions here in Colorado. A call to him will reward you with helpful advice on the growing of these plants.

If your planting needs something different to make it more interesting, plant some of the broadleaf evergreens this spring. You will like them.

VERDANT VERSES

MY PARAGON

O God, make me as clean as a tree,
Wind-swept, rain-swept and strong;
Make me as natural, happy and free,
Looking up all the day long.

Help me to branch out as far as a tree
To settle my roots deep and firm,
To shelter all things that depend upon
me,
As the tree shelters me from a
storm.

Let me awake with fresh life in the
Spring
After a winter of sleep;
Then I'll be ready to take a new fling
At Fate, — and my own counsel
keep.

KATHERINE PAULL,
Littleton, Colorado.



The plant life growing beneath the trees forms a solid mass of green rising to the first branches.

A NEW HAMPSHIRE WOODLAND

C. A. BARBOUR

THE most striking thing about a tract of northeastern woods, as compared to a Colorado forest, is that one never sees any bare ground at all within its area. Rocks and ledges protrude here and there but of loam or gravel not a trace even in the paths or wood roads. There is a thick covering, several stories high between earth and treetops, spread over the entire woodland. The vegetation that makes up this covering is rich in variety at every level.

The trees in these New Hampshire woods are mixed hardwoods, com-

bined with conifers, and the plant life—lichens, mosses, flowers, shrubs—growing beneath the trees forms a solid mass of green of differing heights rising in many places to the first branches.

A small woodlot of a few acres, only casually examined, showed the following species growing layer by layer on the forest floor. Under the hardwoods there is a heavy mat of leaves in various stages of decay. The first "story" above this contains: club moss (ground cedar), gold thread, foam flower, dwarf cornel, canada

mayflower, twin flower, pirolla (wintergreen), partridge berry, hepatica, trillium, clintonia, etc. A little taller are: solomon's seal (true and false), baneberry, Indian cucumber, bracken and many varieties of fern—Boston, Interrupted, Maidenhair, etc.

The shrubs and shrub-size bushes associated with the hardwoods are chiefly hazelnut, thimbleberry, blueberry and striped moosewood. The trees in the top story are as varied as the plants below. The principal species are: rock maple, soft maple, white and yellow birch, beech and poplar, black and bird cherry, white ash, ironwood (hop hornbeam), basswood (though rarely). All through this type of woodland there are clumps of white and red pine, spruce, balsam fir and an occasional hemlock.

Where the stands of evergreens are purer there is less underbrush. A thick mat of needles covers the earth and this acidity prevents any great amount of forest flora. There are, however, to be found mosses, trailing ground pine, wood sorrel, pipsissiwa, Indian pipes, as well as toadstools and fungi galore.

In the clearings open to the sun, along the edges of the wood roads and in swampy hollows within the woodland borders a long list of shrubs, grasses, berries and flowers can be found—each in its season. Willows, alders, steplebush. Cattails, wild oats. Strawberries, raspberries, blackberries. Dandelions, violets, woodlillies, buttercups, cowslips, yarrow, bottle gentian, goldenrod, asters and "others too numerous to mention"!

WHAT'S A MING TREE ANYWAY?

Have you a gnarled, old pygmy tree for a table decoration? Is it a couple of hundred years old, and does it spring from the hoary temple of the Ming Dynasty?

Some of us became curious and tried to find out more about it. Our Editor, with uncanny intuition traced it down to an *Eriogonum*—close relative of our Sulphur Flower. He was right. Somebody else recognized it as a manzanita, close relative of our Kinnikinnick. And he was right. That may sound like a politician's compliance. Or like a freak of nature. The latter comes close to the point.

A "Ming Tree" is neither tree nor Ming. Here is the recipe: Take a picturesque branch of the native California manzanita (*Arctostaphylos manzanita* or related species), the more crooked the better. To it, tie, or wire, pads of Alpine Buckwheat (*Eriogonum ovalifolium*, or related species), in such a manner that they will imitate the foliage of the "Ming Tree." Use any appropriate die or color to make the whole look both aged and "recently alive."

The important thing is to supply a solid base, and a price tag, not below twenty-five dollars. And there, my horticultural easy-mark, is the secret. What was it, Barnum said? (Of course, we must pay for "art" and ingenuity in arrangement.)

A recent innovation is to supply the germ of life. If the whole tree is inserted into a burl of redwood, and then placed in water, you may have the rare satisfaction of seeing it sprout. Only you won't get new little Ming Trees, only redwood sprouts.

Now for a more serious note. If you realize that this Alpine Buckwheat grows at an extremely slow rate, and is found in only restricted spots—, do you see what might happen to it in a short time if "Ming Trees" are sold at lower prices? That, my friend, comes down to the matter of CONSERVATION.

M. WALTER PESMAN.

DOWN WITH THE SAP!

M. WALTER PESMAN

"IN FALL", sez Hiram, "the sap goes down, and in Spring the sap comes up. And if you don't believe it, you jes' try to tap a sugar maple in fall, instead of spring".

So that's it, and that's all there is to it. Or is it?



Well, exacting scientists do not seem to agree with Hiram. They have proved that this "sap" goes both up and down in both spring and fall. They can show that there is some movement of sap even in midwinter, that it is part of the life process of a tree.

What's more, they do not seem to be satisfied with the word "sap" itself. It is too vague a term; that vagueness leads to misunderstanding, they say.

There are two kinds of sap. There is the very watery solution that is taken up by the roots and used in the leaves,—and there is the concentrated "plantfood", such as sugar, that is

prepared in the leaves and that must be transported to the rest of the tree.

Roughly speaking then, this watery raw material must be carried up thru a tree trunk to the leaves, and the fabricated end product must be transported from the leaves to the rest of the tree,—in other words, mostly down.

Again, roughly speaking, it has been accepted widely until rather recently, that this diluted raw material, consisting of inorganic salts and water, travels through the woody part of a tree, (so-called xylem), and that the fabricated plantfood, consisting of organic materials in solution, is carried in the outer layer of a tree, the phloem or bast tissues. So that there is a dual system of transportation in a tree trunk: the raw sap comes up through the wood, the prepared plant food goes down in the bark (bast or phloem).

The proof? 'Way back in 1727 an experiment was made by a certain Steven Hale—a simple experiment, which anyone can try over. He removed the bark all around a tree,—ringing it,—and found that its leaves did not wilt. But they would wilt when the wood was cut, wilt quite rapidly. In fact, a tree will keep alive all during summer in spite of being ringed.

That shows clearly enough then, that the watery sap,—the raw material so to say, flows up through the wood to the leaves. According to Hiram's simple theory, it would be easy enough for the "sap" to go down again through the same "plumbing system", when fall calls a halt to the tree's activity.

It's not so simple. What does happen is that a little movement of the

crude material continues even during winter,—yes, up,—and that there is no downward movement in a ringed tree to feed the roots. Result: a dead tree next spring.

As if the tree were trying to rush aid to the starving roots, a bulge is often noted just above the cut ring.



**WATER AND MINERALS GO UP
THROUGH THE WOOD (XYLEM)**

And the fact is that such a tree may be revived if a timely bridge is made over the ring,—a bridge of small twigs, inserted both above and below the ring.

Until recently then, everybody in plant science was happy in the idea that there is a simultaneous movement up and down,—the crude sap going up through the so-called tracheids of the wood (or xylem), the prepared plant food going down from the leaves through the cells which constitute the bark, bast or phloem.

After about 1920 dissension arose among scientists and it led to more and new experiments on these sap movements, as to exact location, speed and the forces causing them. A standard work on "The Translocation of Solutes in Plants" by O. F. Curtis, reports a number of these new experiments and theories. After all is said and done, no important general reversal of previous findings was proved necessary. A few interesting items follow.

1. While large quantities of starches and sugars are found in the wood regions, they are not carried upward through the wood tracheids; all transportation of this prepared food is through the phloem (or bark

if you prefer that name). Maple sugar, in other words, is not brought up from the roots mainly, but is tapped not too far from the place where it was stored in a different, (insoluble) form to begin with. Transportation of food material to be deposited in fruits, also, is through this phloem, even though the general direction may be up, and not down. So it is not the "up" or "down" that matters so much, as the sort of stuff to be transported. And prepared food goes through phloem, not through the wood (i.e. xylem).

2. The upward transportation of nitrogen (and ash content) is interfered with by ringing; it seems that phloem is selected as the "common carrier" for these salts. That contradicts the theory that all salts are carried through the wood, with the water stream from root to leaf.



**PREPARED
PLANT FOOD
GOES DOWN THROUGH
THE BARK (PHLOEM)**

3. No evidence was found that solutions or water normally move backward through the wood. So the general rule still holds: "crude sap goes up through the wood".

4. What bothers present scientists considerably is the force that causes the flow of sap and also the speed of movement, in spite of friction and gravity. After all, it takes a lot of

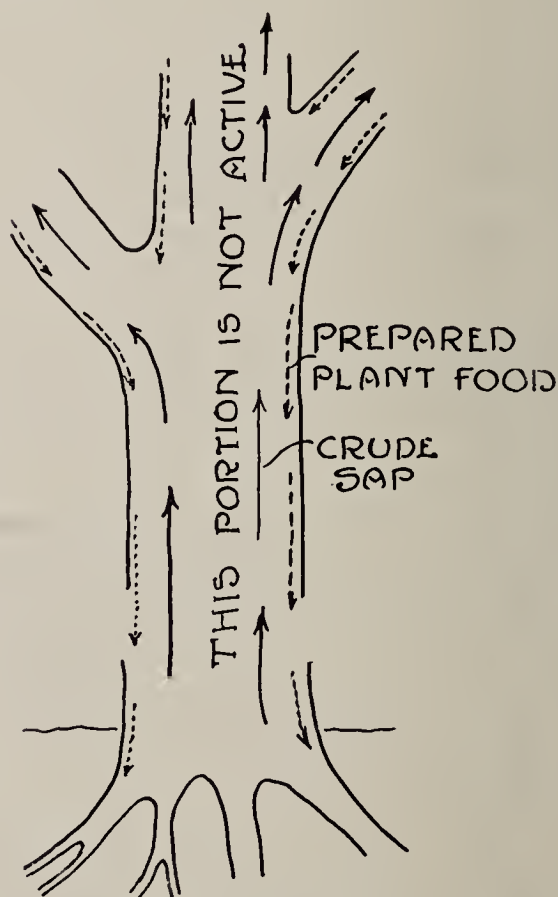
power to reach the top of a giant tree of a hundred feet and more. Many theories are proposed: osmosis, root pressure, capillarity, even electric potential differences (the latter for the distribution of hormones). Wow! If these learned terms floor you, look at the end of this article for explanation.

5. There are no continuous open tubes in the phloem (bark) cells, and yet there is movement through them, particularly of prepared food going down the stem. How? The best guess, so far, seems to be in the streaming of the protoplasm, (living goo) of the plant itself. It passes right through the sieve-like walls of these phloem cells, and movement is a natural phenomenon of living protoplasm. Here then is a field of experimentation that is still wide open. Much observation is needed, and microscopic research.

From all the inquiry already made we can now form a pretty accurate picture of what is going on in a growing tree. Starting with the roots, we find large quantities of water, together with some materials, being taken up from the soil, and transported,—through the woody part of the trunk, (the xylem),—to the leaves. Leaves are the food factory of the plant: the crude material brought in by the tracheids of the wood, is used, together with carbon dioxide taken in through the leaves. With the aid of sunlight, complicated organic matter is fabricated in the leaves: plant food. Some of it is put in storage for later use, some of it is used in the growth process itself. In any case it has to be transported from the leaves to other parts, mostly down of course. And this transportation system is the phloem, or bark.

As fall comes on, the “factory” becomes less active. Finally the leaves drop, excessive food is stored away in wood, roots, and fruit; even some of the transportation tubes are plug-

ged up with starches and other food. But since water continues to be given off by the twigs, and since some green matter in the twigs continues to produce a little food,—the dual transportation system keeps on functioning. This is especially true in a dry climate like ours, and in bright sunshine like ours.



BOTH STREAMS
FLOW THROUGH THE TRUNK
- IN SEPARATE CHANNELS -

Suddenly, in spring, new activity begins again. Plant food, tucked away in fall, is taken out of “cold storage,” starches are turned into sugar solutions, buds unfold with the help of both hormones and food, new wood tracheids are formed, and as by a miracle the factory is put back into production.

Complicated? Yes, but simple and most efficient in principle. As simple and complicated as all wonders of nature.

"Waal", sez Hiram, "I told you that the sap comes up in Spring". All right, let's leave it go at that: the most spectacular movement is that sudden speeding up of the upward stream, and the change of insoluble stored-up food into sugars and such in solution.

P. S. For Hiram's benefit are the following explanations:

Osmosis is the force that draws water, or a less concentrated solution, into a denser one, through a somewhat porous thin wall.

Hormones are substances formed in living organisms having certain stimulating effects, such as growth, etc.

By *Capillarity*, or *Surface Tension*, a liquid in a narrow tube may be raised above its "normal" level.

IN DECEMBER

By all the sages' garden rules
At this time all my garden tools
Should hang, sharp, shining rows,
Ready and waiting for the end
Of winter snows.

I WISH THEY DID!

Fertilizing should be complete,
Mulches should cover tender feet,
Composting leaves should be begun,
(We shouldn't burn them—no, not one!)
And Christmas shopping should be done.

How? Goodness knows!

I WISH I DID!

—MAUD McCORMICK.

Tell us what YOU would like to see printed in the Green Thumb.

THE WEEK-END GARDENER

SAY Mom, didn't the leaves go off the trees in a hurry this fall? Winter may come any week now. Let's see what needs to be done while the weather is good. The elm trees do look bare, and so black and dirty. What's that? The black on the elm trees indicate that they are full of scale. I'll call some good spray man right away and have him put them on his list for a domant oil spray. Do we have any other scale on the place, Mom? Oystershell on the lilacs and cotoneaster. O.K. Tell him to hit those shrubs too when he comes. Maybe we should have him check the big maple to see if the maple scale has come to this part of town yet.

Come out here Mom, and show me where you wanted that lath house built. This should be a good time to get it started. There isn't room for a big one, but even a little space should allow us to have a few tuberous begonias and primulas—maybe some eastern wild flowers such as we used to pick as kids. I'll measure the space and figure out the material needed tonight.

That old honeysuckle bush is just growing too fast. I'm going to get real hard-hearted and take it out so a few of the nicer shrubs will have a chance. Something is always growing too fast, or else dying.

The ground is still not frozen out in this sunny part of the garden. I've a notion to haul out some of that soil that has so much lime in it and replace it with some good soil and mix plenty of manure with it. I'll bet that the Ninebark and Flowering Quince will have a better color when they get their roots into some good soil again. I can't replace the soil around our maple tree, but I can get the tree man to treat the soil under it to correct the chlorosis.

That's right I did promise to drive you to the hills once more if the weather was still good. O. K. get your bonnet. Let's go.



COLORADO SILVER CEDAR BOTANICAL RESERVE DEDICATED



ON account of lack of cooperation on the part of the weather man the scheduled dedication ceremonies for the new Botanical Reserve were held indoors at Horticulture House. Mrs. Paul Timm had prepared one of her famous picnic dinners, so this was brought into Horticulture House and served while it snowed outside. Following the lunch Mr. S. R. DeBoer

Above: View of the James Peak group from Stapleton Drive.

Left: Campfire girls working on the trail.

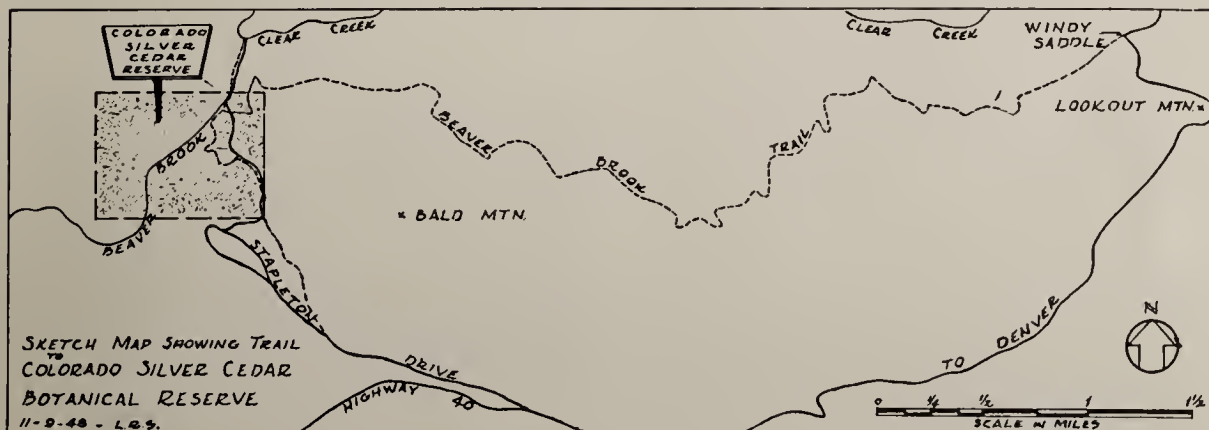
Below: Typical Colorado Silver Cedar tree.

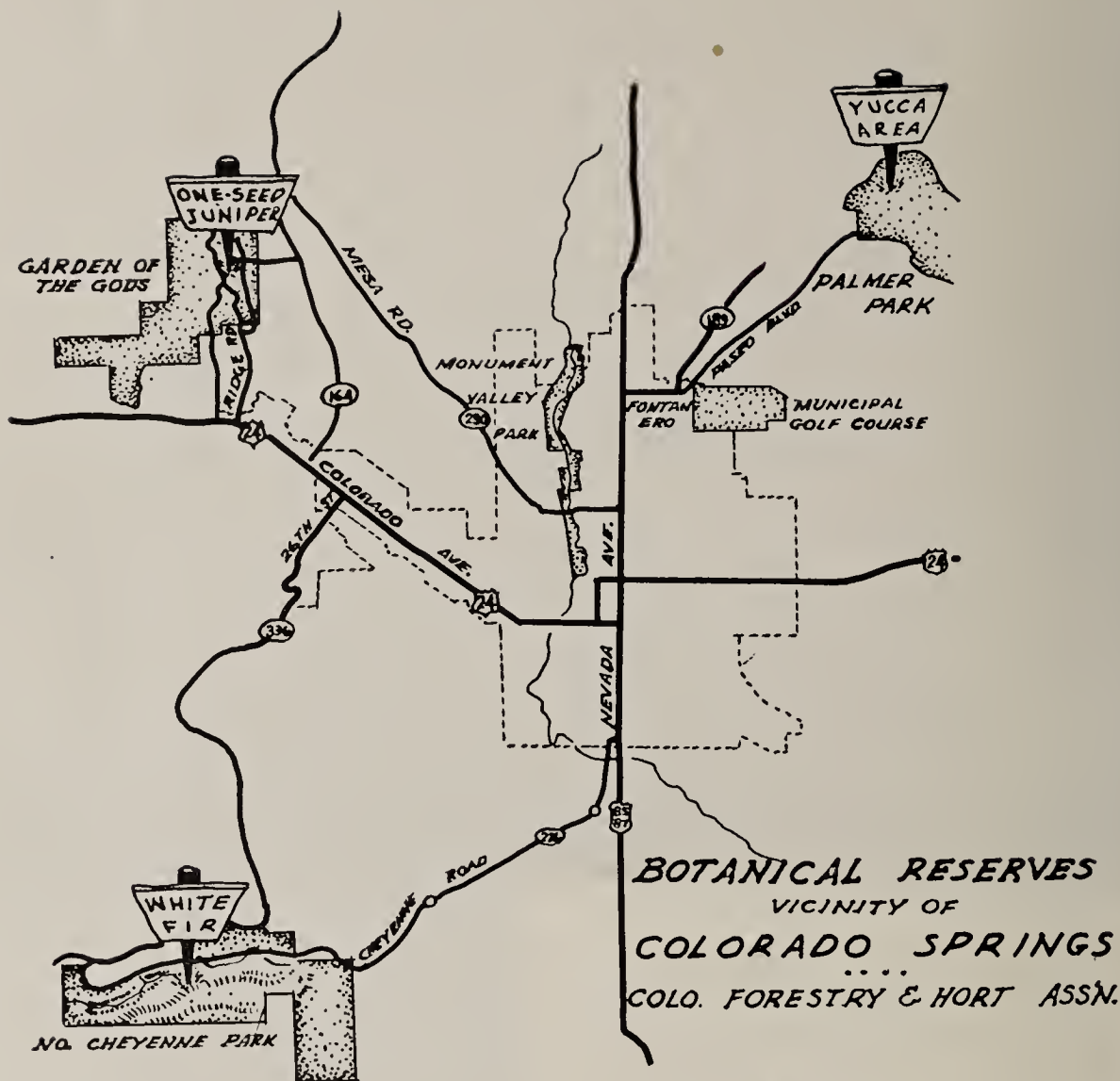




introduced Mr. Leroy Hinman, Supt. of Denver Parks, and Mrs. John Evans, our president, who presented and accepted this new botanical reserve. Mr. Ed. Wallace had painted a fine sign to mark this area and this was set up in one end of the room to give atmosphere. He had also dug up and potted a few Colorado Silver Cedar trees which added to the odor and atmosphere. Later the sign was taken out to the area and set up. This area contains 240 acres lying just

north of the end of Stapleton Drive on Genessee Mountain. It includes some of the meanderings of Beaver Brook and some steep hillsides. In addition to some of the finest specimens of Cedar trees there are typical groups of all the common plants native to this altitude. While the City of Denver will retain title to this land, they are setting it aside as a permanent botanical reserve. Here will be preserved the native plants in their natural surroundings.





E.W.W.

S.R. DE BOER & CO - CITY PLANNERS

About three miles of the Beaver Brook trail, which was established by the Colorado Mountain Club and the City of Denver in 1909, winds thru this reserve. Work parties from various interested groups will rehabilitate the trail this fall and next spring. We would like to see the area accessible to those who appreciate such things but not be made too attractive for the casual picnicker. Some beautiful views await the hiker over this trail.

The original trail led from Windy Saddle on Lookout Mountain for a distance of about 9 miles west, ending up at Hosa Lodge. Some of the trail has since become obliterated, but now that it will be accessible from the

west end, it is sure to be used more.

There are many other areas over the state which should be included in this series of Botanical reserves. Last fall there were the first three areas dedicated near Colorado Springs. This Colorado Silver Cedar area is the fourth.

Until botanical love gives way to the dawn of garden standards a spear of grass and the fairest flower are of equal rank. How next to impossible to visualize, the Columbine, the state flower of Colorado, from its botanical description. Through horticulture must come the real discovery of Rocky Mountain flowers.

D. M. ANDREWS.



Scouts working on the Reserve marker.

THE WEEK-END GARDENER

CHRISTMAS, Christmas, Christmas, that's all I hear. Let's see if there is anything in our garden that is suitable to bring in and decorate the house. Some fruit on the English hawthorns and a few stray sprigs from the Pfitzer Juniper that should be trimmed off anyway. It's too bad that those Cotoneaster berries are such a dull color. I'm going to have a red-berried variety next year, and I'm going to fix up a place to try a Firethorn again. O, here are some nice fruit on Euonymus. It looks almost like Bittersweet, and should make fine Christmas decorations. I guess that it is alright that some berries are not so bright colored, then I will leave them for the Waxwings and Robins when they come through in the spring. I'm going to order a few more berried shrubs to fill in around in vacant places. They give a nice touch of color when the leaves are off.

Mom, how about decorating that big spruce in the front yard for Christmas this year? A few colored lights would make it look fine, and we would not need to put up a tree in the house. I'm afraid that there will be a serious shortage of trees suitable for Christmas if we continue to use, and waste, so many every Christmas.

Say, that wind is getting cold. Let's call it a day and go in. O, I forgot about all that Oregon Grape and Kinnikinnick that your brother in the mountains gave you last week. Let's decorate the house with it. When we get that all fixed up I believe that we should check over all the house plants, repot some and spray everything and give them a watering with a good liquid fertilizer.

(Mom doesn't know that I'm getting her some new plants for Christmas. A couple of new amaryllis bulbs, some new cactus and a begonia.)

Where is that new garden book? I'm going to sit down and enjoy it now. Maybe I'll pick up some good ideas for making our garden better next year.



A DREAM COME TRUE

BEVERLY E. FINCH

IF YOU are one of those who have had dreams of owning a mountain retreat, or one by the seashore, let me tell you how my dream became a reality. When first the desire to build a cabin in the mountains presented itself to me several years ago, during the Depression as a matter of fact, it seemed impossible of fulfillment, for financial and other reasons. But in its prenatal state the idea must have been a sturdy little youngster, from the violence and persistence of its kicking and demand for recognition. And as persistence nearly always wins if it is kept up long enough, so it was with this little fellow. Faith, persistence, and fulfillment have always gone hand in hand, but in any enterprise the first must be put to work in order to bring forth the last. I realize now that faith played an important part in developing this little drama.

Few there are who do not more or less yearn for the freedom of the out-of-doors, away from places and employments that restrict our longing for the beauty and bigness of nature. In my personal experience I have met only two people who did "not care for the mountains." One said she was afraid of them; the other that there were too many ticks and ants! But this class is so definitely in the minority we can pass them by without notice. The hosts that travel our mountain highways give ample proof of the many who do "care."

The Idea

Everything starts with an idea, be it a mousetrap or a Boulder Dam. The universe itself was first an idea in the mind of the Almighty, and man is ever His imitator.

It is possible that my dream would

never have seen the light of day had it not been for the promoters of the particular mountain homesite property where my cabin was finally built. I was one of a group invited for a trip to the site, with lunch included, gratis, on a gorgeous day in June—the month which starts so many enterprises on their way. I fell in love with a plot among towering pines on a rather steep, sunny slope overlooking a stream which meanders casually thru a beautiful valley, and on this slope, as faith gradually overcame my many doubts and fears, was where my cabin idea eventually evolved into a reality and to which I gave the name *River Bend*.



Above: The Cabin.

Left: One of the flowers found on Mrs. Finch's property as painted by her.

Ways and Means

Many problems to retard my hopes and test my faith presented themselves, but one by one each was solved. That first summer I wanted to be near the site of my prospective home as much as possible, but hotel rates were beyond my means. I had a two-weeks vacation coming to me; I happened to own a swinging porch bed; and a

friend offered me the use of a small tent. Putting these three assets together, I decided to set up my own little camp on my hillside—the plot which by this time, through an easy payment plan, was definitely mine in prospect,—and watch the building operations. As yet I had no car, but had several friends who had cabins in the vicinity and who for a small sum furnished me transportation. So that whole summer I never failed to be taken to the spot I had begun to love, each week-end and every holiday.

So many men were out of work that year that I was able to find two carpenters who undertook the work of building my cabin at a reasonable figure, and here too the easy payment plan came to my assistance.

Unforeseen Dangers

On my plot was a miniature cliff and on the edge of this I set up my swinging bed and slept under the pines and stars until the time when a roof topped my cabin and put an end to my midnight star-gazing. In retrospect it seems rather a daring thing for a woman to have done, sleeping alone out on the mountain-side, especially when I think of the newspaper article I afterward read telling of a man who lived in the village a few miles away from me going to his chicken coop one evening just after nightfall and upon opening the door being greeted by a full-grown lion. Even now the goose flesh appears and I shiver to think what would have been my sensation if I had been awakened one of those starry nights by the caress of a cat-like paw or a lionly kiss upon my cheek!

Fruitage

When the builders had completed the shell—floor, walls and roof, with only two-by-fours to indicate the fu-

ture partitions—I proudly put my permanent bed in one corner and called this my bedroom, and from then on slept indoors (with somewhat a feeling of relief I must admit) where there were neither lions nor miniature hurricanes to disturb my peace and safety.

That first summer I made no attempt to do any interior finishing, but was content to have a roof over my head and a place to cook my meals—in fact a home in embryo. It was three years before my cabin was anything like completed, and much of the interior I did myself. But step by step my dream has taken on a concrete form, giving me a thrill with each step, and now I look forward to a week-end of joy and freedom each time I plan a trip to my mountain roost, sometimes with a friend or two, and sometimes to seek soul refreshment in solitude, the magnificent solitude of

“... those who bide where mountains rise,
Where yearning earth
draws closest to the skies.”

If you are one who does a lot of wishful thinking about the cabin you would like to own some day, remember this, that “some day” is like tomorrow in that it never becomes today. Now is the only time there is. After ten years or so you will wish you had put your faith to work and plunged in as I did so that you might be knowing the joy of fruition and fulfillment where otherwise a void would still exist. And remember too that a cabin can be built out of the substance of faith as well as any other “thing that is hoped for.”

If you *really* want a cabin, make a start, for nothing was ever finished without a beginning.



Do you have a friend who might enjoy the Green Thumb? Tell them about it.

A WEED GARDEN

By F. BINKLEY

WHY not a dry border, planted with natives that thrive on scant summer rains of the foothills? This somewhat obvious idea came to me while I was watering a drooping garden and gazing with envy at a nearby hillside, untended and yet pleasantly covered with attractive plant forms. A dry bank at the end of the garden accommodated a variety of these plants before long, and justified itself as a flower border instead of a weed patch.

Yucca glauca provides creamy spires in early summer, and its leaves stay green all year. A good barrier plant, as is the cactus, it is better than any spoken word for keeping small boys and their dogs off the bank. Yuccas are old favorites for the garden, and here in Colorado we may dig the roots from waste land. They take their own good time about blooming, however. Prickly pear is a gleaming mass of yellow blossoms for a while, and in autumn has pretty red fruits.

Pink-flowered *Geranium fremonti* sends its root very deep, and blooms through the summer. Prickly poppy, *Argemone intermedia*, an annual, has silvery leaves and floppy white flowers. *Liatris* offers purple spikes in late summer, while wild Yarrow from the field and its horticultural sister, *Achillea*, The Pearl, continue the white of *Argemone*. Other composites, in yellow and blue, are yet to be moved to the bank.

Artemisia frigida, delightful in spring for mats of curly, velvet foliage, makes a two-foot growth of soft gray fernlike leaves. Another aromatic *Artemisia*, with white-felt leaves on wand-like stalks, is a nice accent, marking the turn of the path in the dark of the night. Vigorous

competitors, the *Artemisias* had to be limited in their invasions of plank boundaries sunk into the soil.

TO THE FLOWERS

Ere the foot of man had touched the
heather,
Ere a single heart had throbbed to
love them,
Bloomed the flowers.
Bloomed and faded with no living
hand to cherish
Rampant beauty, or a single lovely
flower.
Trails of beauty in all lands and for
all peoples,
Through the cycles of the ages since
man's heritage began,
Bloom the flowers.

MARY C. SPRIGG.



CHRISTMAS TREE CONSERVATION

EVERETT J. LEE, *State Forester*

WITH the tremendous strides being made in Colorado in the practice of soil conservation, on both irrigated and non-irrigated lands, and with people in nearly all walks of life backing sound conservation practices, it is hard to understand why so many owners of beautiful forest land, particularly in the Douglas Fir areas, will permit unskilled labor and people not interested in anything but the almighty dollar to go upon their lands at Christmas time and all but denude the area of the young reproduction. And why, after the land has been cleared of all the 15 to 25-year-age class, will some of the same owners permit cutting the tops from the larger and older trees as well as stripping of all boughs, thus rendering the tree practically useless, is just beyond the comprehension of any conservation-minded person.

This information may startle some of you readers of the "Green Thumb"; and you are likely to say, "They can't do that because there are laws which prohibit such practices in our forests. That sort of tree cutting even if it is to secure trees to add cheer to thousands of homes at Christmas time is detrimental to future wood production and if continued will have a serious effect upon valuable watershed lands." You are also likely to say—"Since there are laws which prohibit this sort of destruction to forest lands, why don't the men whose job it is to enforce these laws do something about it?"

In your last statement you would be about half right. There are such laws to protect forests growing on Government and State lands and I am sure the men entrusted with the management of these forest lands are

doing a fairly good job on some 7,875,000 acres of commercial forest lands under their jurisdiction. This is evidenced in Colorado by the fact that less than 25% of the Christmas trees cut annually come from publicly-owned lands and the other 75% come from approximately 1,951,000 acres of commercial lands in private ownership.

When you stop to consider that only 5% of the total area of commercial forest lands in the state are stocked with Douglas Fir and that we have been and will continue for some time to secure our annual supply of Christmas tree stock from less than one hundred thousand acres of these lands, is it any wonder that Christmas tree dealers are becoming quite concerned about where the next year's supply is coming from? It also may answer the question as to why each year more and more trees are being shipped in from other states.

I wish it were possible to give you with some degree of accuracy just what the Christmas tree business and the green bough business means to the land owners and retailers of the state. But, to attempt to do this, would be only a guess because to date there has been no way of checking the number of trees sold except in a very few towns and cities which have ordinances requiring that trees sold within corporate limits must be cut under rules of Forest improvement. There is no way of checking the tons and tons of green boughs cut from our Douglas Fir stands annually; nor is there any way of checking the many thousands of trees cut by trespassers in the mountains and hauled out in their private cars.

Such ordinances are on the books



of Denver, Colorado Springs, Longmont, Fort Collins and Boulder. The number of tags of approval issued to cutters delivering trees to dealers in these towns varies from 77,000 to 100,000 annually. It is estimated that less than 20% of the trees cut go to

these places. It is quite evident that should a cutter or dealer in any other than the above-mentioned places in the state choose to sell trees cut in any manner, he may do so because there is no state law which would prevent him. Nor are there any state

laws which regulate the number of trees which may be cut in any one year.

I do not wish to imply that all the Christmas tree cutting operations in the state are carried on in a destructive manner, because this would be unfair to the land owners and Christmas tree dealers who are making every effort to see that a good job is done, and that the forests where their operations are carried on are left in better growing condition than they were before.

A few land owners are even re-foresting their cut-over areas with Douglas Fir seedlings, hoping at some later date to be able to harvest a few trees each year at a time when other farm or ranch work is slack; and in so doing, add a few pennies to the Christmas pocketbook.

Unfortunately, there are too few of the conscientious, informed type, and too many of the uninformed and "don't give a darn" kind. The question is why are there so many land owners and Christmas tree retailers who are not familiar with what is considered good forestry practice and who pay little or no attention as to how their cutting operations are carried on?

It might be that those of us engaged in the forestry profession have failed in our obligation to the people of the State—the very people, who in most instances make our salaries possible—by our not transmitting the information we have to them thru a more intensified educational program and with actual on-the-ground assistance, as the Soil Conservation Service is now doing. Or it could be that sufficient and adequate legislation has not been passed by our Legislature to protect our forest lands in all ownership, and by so doing protect the valuable forest and watershed lands of the State for all.

I believe most foresters will agree that there is a definite need for an expanded educational program which will enable all of the people to have a better understanding of the State's forest and watershed problems.

At the present time, very little is being done in the way of actual on-the-ground assistance to forest owners and it is quite reasonable to assume that in order to encourage better forest management practices, it will be necessary to render the same service to the owners of forest and watershed lands in their problems as we do to the owners of the irrigated and non-irrigated farm lands mentioned in the beginning of this article.

It is my sincere hope that at some future date this sort of a program will be possible and I sincerely believe that once some type of forestry program is made state-wide and the advantages of such a program are made available to woodland owners and others, the majority will be anxious and willing to cooperate, since it will enable owners of forest land, to derive more revenue from their lands by increased production thru proper cutting and reforestation methods.

There are always a few selfish people who with little or no regard for others, would pay little or no attention to the methods used as long as it was to their interest, and it may be necessary, in order to control this situation, to strengthen our laws of forest protection in the State just as there are laws necessary to protect the average citizen from the thug and crook.

In any event, if we are to continue to keep our forest and watershed lands in the highest state of productivity possible, to make certain that our valuable water and timber resources are retained for future generations, some type of a good sound forestry program in the State is a vital necessity.

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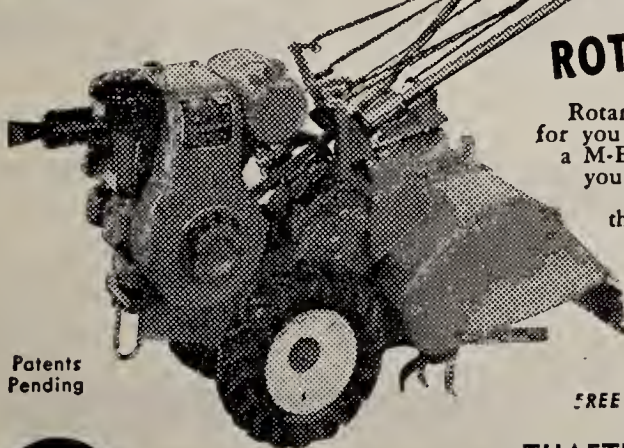
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SPEAKING OF TREES

From National Arborists Association

NO single part of Nature has influenced man's living so completely as the stalwart tree. He looks to trees for comfort, protection, peace of mind and hundreds of useful products, lumber being the principal one. Too often we take trees for granted only to find that when we want them most we've destroyed them with neglect.

Do we place too much sentiment or importance on shade trees? Look about you for the answer. You will see children at play in a shaded lot mothered by a gnarled oak or friendly elm; a church lawn festival or society garden tea amid a group of trees like friendly hosts gathering folks about them; the man of estate viewing with lordly pride his well-groomed trees;

and the harsh structural lines of a factory softened by the beauty of trees. At any home, any place, any where, along highways or in forests, trees are a living part of man, an earthly possession that provides cool comfort from the blazing sun. They ask only our affection and care in return.

In a practical sense shade trees serve as barriers to soil erosion, act as dust collectors along streets and highways, muffle noise in traffic areas, and for home owners and realtors increase property values.

Trees have served man since the beginning of time. Leaves of the fig tree clothed Adam and Eve in the Garden of Eden when they first discovered their nakedness.

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INDOOR BULBS

Failure of bulbs, planted indoors for winter gardens, to make lovely flowers is usually due to fast growth, reports Charles M. Drage, Extension horticulturist at Colorado A. & M. College. On the other hand, when the results are spindly top growth, no flowers at all or poor ones, and scanty roots, the temperatures have been too high.

"Avoid temperatures above 70 degrees, and keep the bulbs away from steam pipes or radiators. Keep them near windows where there is light and it is cooler. The enclosed porch or sunparlor is ideal for flowering bulbs.

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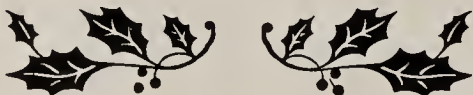
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AN APPEAL FOR A PARTNERSHIP WITH NATURE

Reprinted by Permission from "The Garden Path"

IT IS our responsibility to know and to practice the conservation measures necessary to prevent further damage and ruin. We can actively foster the conservation program in our communities. Each gardener can start immediately in her own garden. Reverence for the soil we cultivate, coupled with the realization that it is our great heritage, will make us willingly return to the land the elements removed by our crops. Give the best you have to the earth, and it will give the best it has to you. The finest legacy we can leave our children is a fertile piece of land, whether it be a town flower garden, a vegetable patch, or a well husbanded farm.

We submit the following suggestions in the hope that they will be helpful in establishing your partnership with Nature:

Specific Conservation Measures for
Your Flower and Vegetable Garden:

1. Plan surface drainage to prevent soil erosion if land is sloping.
2. Plan layout of borders and rows across rather than with the slope of the land.
3. Make terraces if land is on a hillside.
4. Small walls and grass strips will hold soil.
5. Make use of ground covers to stop erosion; mulch flowers and shrub borders the year round. Plant all banks and gullies.
6. Use both manure and commercial fertilizers annually.
7. Run one or more compost heaps, saving all waste plant material not diseased or gone to seed, and all leaves, for compost builds up organic material for the garden.

8. Plant those things which do well on your type of land.
 9. Do not over-plant, for that exhausts soil fertility.
 10. Remove mature crops promptly to prevent impoverishment of the soil.
 11. Use shallow cultivation; mulch summer and winter; control pests.
 12. Grow cover crops in the fall and turn them under in the spring especially in vegetable and cutting gardens.
 13. Plant berry-producing shrubs to attract and feed the birds. Select a variety of shrubs so that there will be food for all four seasons.
- "We pass this way but once. Let us beautify the path as we go, so the world may see which way we went."



GOODWILL SEEDS

Pinyon Pines may yet grow in Switzerland—if the pinyon nuts sent to the Botanic Garden in Berne this week take hold. Our Shrub Maple (*Acer glabrum*) may adorn the Botanic Gardens of Norway and Sweden; Colorado Mountain Ash may show its gorgeous berries in the Biological Institute in Wijster, Holland.

Through contacts made last year by M. Walter Pesman on his study trip to Botanic Gardens in Europe, the Colorado Forestry and Horticulture Ass'n. now has correspondence with a number of such institutions. Seeds, collected in our region, are being sent abroad. In return we may expect similar courtesies from them as soon as our Arboretum materializes.

Among seeds sent thus are: Mountain Ash, Maple, Native Barberry, Mahonia, Utah Juniper, Colorado Juniper, Buffaloberry, Pinyon Pine.

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Thomas L. Martin.....	June 18	Verdant Verses: My Paragon,	
SPRAYING:		Katherine Paull	Dec. 5
Spray Equipment and Chemicals,		In December, Maud McCormick....	Dec. 11
Chas. H. Behse.....	Mar. 12	A Bit of the Outdoors,	
STATE PARKS:		Frank R. Oastler.....	Dec. 32
Spectacular Rock Formations Along		WEEK END GARDENER:	
the Hogback near Denver.....	July *14	Week End Gardener.....Jan. 5, 13, 19, 21, 27	
State Parks of Minnesota.....	July 19	Week End Gardener.....Feb. 5, 15, 21, 31	
The Recreation State Without a State		Week End Gardener.....Mar. 6, 20, 24	
Park, Harold W. Lathrop.....	Aug. *16	Week End Gardener.....Apr. 9, 12, 25, 35	
White Rocks, William A. Weber....	Oct. *6	Week End Gardener.....May 6, 17, 22, 28	
VEGETABLES:		Week End Gardener.....June 13, 25, 31	
Winter Planning for the Vegetable		Week End Gardener.....July 14, 21, 27, 31	
Garden	Mar. 23	Week End Gardener.....Aug. 13, 18, 25	
Safety in Vegetable Garden Insecti-		Week End Gardener.....Sept. 13, 25	
cides, Armin Barteldes.....	Aug. *26	Week End Gardener.....Oct. 9, 32	
VERSES:		Week End Gardener.....Nov. 9, 26	
Raking Leaves, Mary F. Legler.....	Feb. 6	Week End Gardener.....Dec. 11, 15	
March, Maud McCormick.....	Mar. 27	WILDERNESS AREAS:	
Silly Sylliloquy, E. T. L.....	Apr. 28	Gore Range-Eagles Nest Wild Area,	
		C. A. Kutzleb.....	July *8

CONSERVATION AND ARMAMENTS

How pitifully inconsequential conservation is considered in the realm of national defense is evidenced by the sums appropriated for each of these necessary elements by the Congress. It might amply be paraphrased "Billions for guns, thousands for trees."

It seems like a rather cockeyed philosophy to build billions of dollars worth of planes, ships and guns, and to train thousands of soldiers and sailors, while at the same time the very things these billions are being spent to protect are being despoiled, burned up or washed away for the lack of men and money desperately needed to assure the stability of the nation.

Our forests are being butchered at an unprecedented rate; uncontrolled rivers are washing away irreplaceable arable land by the millions of tons per year, while the great despoiler of forests, fire, burns millions of acres of precious timber, and bares priceless watersheds to the fury of the elements. Surely these enemies within our borders are as insidious as those three to five thousands of miles away. Without our national resources we have nothing to protect. When will a wise Congress match each billion, for Armaments with a billion for Conservation? It had better be soon!—From "Trees," July-August, 1948.



THE GREAT OUTDOORS

By FRANK R. OASTLER

Oh, give me a bit of the great outdoors
Is all that I ask of you,
Where I may do whatever I like
And like whatever I do.

Where the sky is the boundary up above
And the earth is the measure below,
And the trail starts on where the sun comes up
And ends where the sun sinks low.

Where the wind blows sweet as a baby's breath,
And the sun shines bright as its eyes,
And the showers come and the showers go
As the tears when the little one cries.

And the brook runs merrily through the glade,
Singing its gladdening song,
And the pine trees murmur their soothing sighs,
Still bearing that song along.

Yes, carry me back to the lake's white shores
With its deer and its lily pad,
Where the loon calls out to the moonbeams bright
Through the mist on the waters sad.

Oh, let me hear the elk's far cry
As it sweeps through the forest deep,
Where the silence hangs as over the dead
At rest in eternal sleep.

I'll pitch my tent by some lonesome pine,
By the rippling water's edge,
With the great outdoors as my garden,
And the willows round as my hedge.

And surrounded by pretty flowers,
That perfume the gentle breeze,
I'll idle away the whole long day
In the shade of my old pine trees.

And I'll watch on yonder mountain
The colors change with the day,
And I'll follow each shadow creeping
So silently on its way.

And then I'll give thanks to God above
And in gratitude I'll pause,
And I'll love, not hate, each care that comes
In that great big home—Outdoors.

